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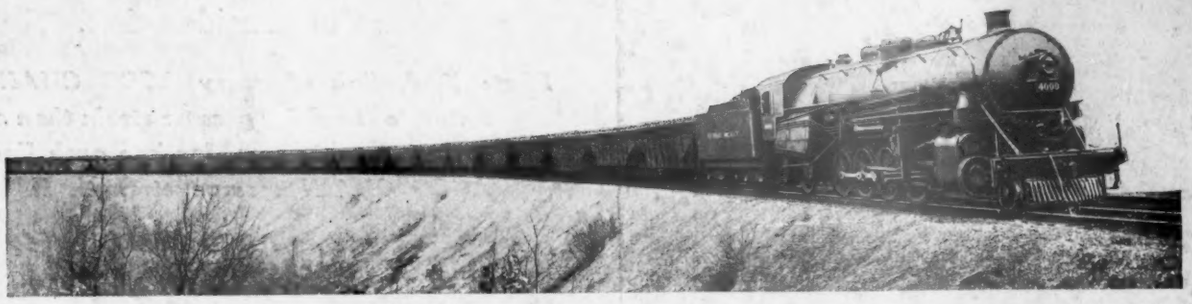

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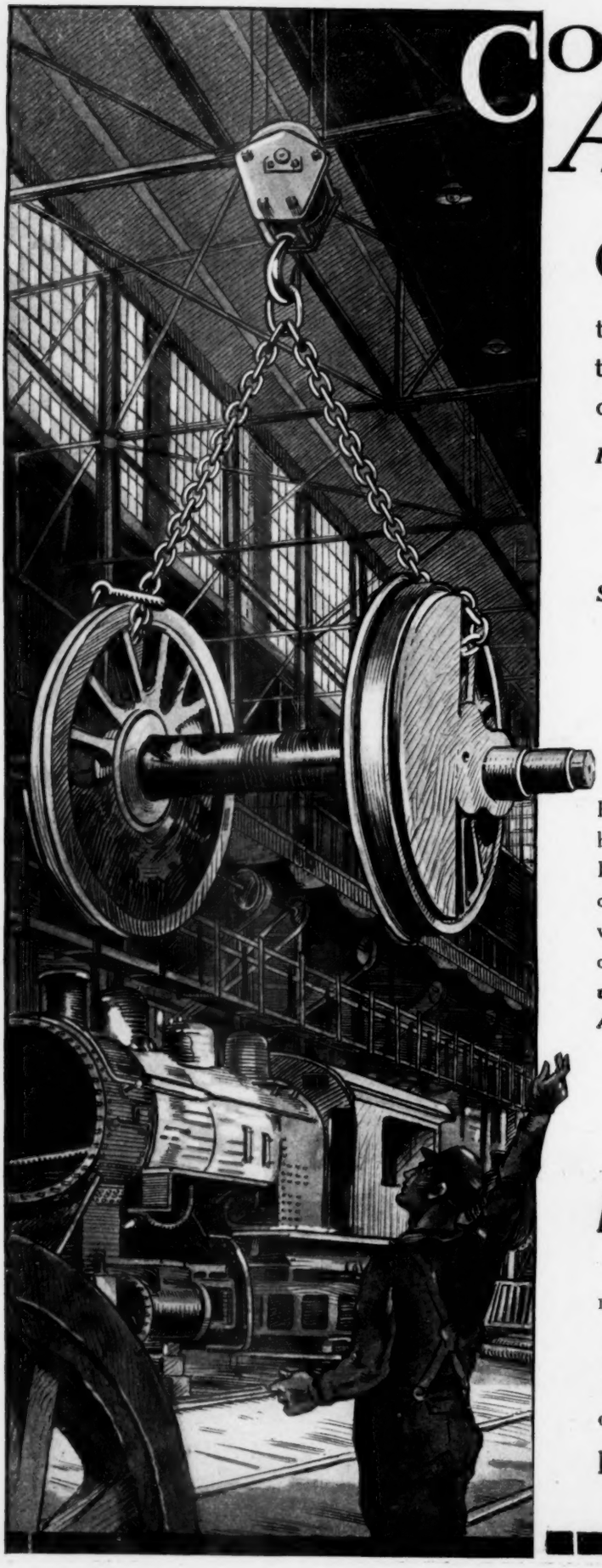

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EDITORIAL
Railway Age

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The National Election and the Railways

THE RESULT of the national election cannot fail to inspire increased confidence in the future of the railway industry and that of the railway equipment and supply industry whose prosperity depends upon that of the railways. Both the Republican and the Democratic platforms declared in favor of a continuance of private ownership and management of railroads. Before Governor Cox was nominated he had indicated in public utterances that he was opposed to public ownership and in favor of fair regulation and he said nothing during his campaign which indicated that he had changed his attitude. But some of his most active supporters made statements and expressed views of a different character. W. G. McAdoo delivered several addresses attacking private operation, defending government operation and arguing that the railway problem never would be solved except by unified operation, presumably of the same kind which prevailed when he was director general. He bitterly denounced the Esch-Cummins Act restoring the railways to private operation and the recent advances in rates granted by the Interstate Commerce Commission. The heads of most of the labor organizations supported Mr. Cox and joined Mr. McAdoo in denouncing the Esch-Cummins Act. Senator Harding began years ago, even before he was elected to the Senate, to advocate fairer and more constructive regulation of railroads. Both before and after he was nominated for President he repeatedly expressed himself as strongly opposed to government ownership. He advocated the passage of the Esch-Cummins Act and during his campaign, in an address at Des Moines, Iowa, described it as "the most progressive measure and the most constructive act of federal legislation in 10 years." He and his party will go into power unreservedly opposed to government ownership and committed to the support of a policy of constructive railroad regulation. The President cannot, if he would, avoid exerting a strong influence on railroad regulation, for he appoints the members of the Interstate Commerce Commission. Nobody who knows Senator Harding will indulge in the belief that he will favor a policy which will give to the railways any advantages to which they are not entitled, but on the other hand his past career and his well-known views give confidence that if the railways are efficiently and honestly managed his attitude will be one of friendliness and helpfulness toward them during the period of rehabilitation and needed expansion that they are now entering.

While the Esch-Cummins Act deserves the praise Senator Harding has given it, the mere adoption of it did not solve the railroad problem. Neither did the advance in rates recently granted by the Interstate Commerce Commission. The earnings of the railways in September under these rates are not wholly encouraging, and it is by no means certain that further remedial measures will not have to be adopted by Congress, the Commission and the federal administration before the railroad problem will be solved. The meaning of the election is so clear, however, in so far as it bears upon the railroad situation, that the railroad industry and the railway supply industry can go forward with reasonable assurance of a period during which the attitude and policies of the federal government will be more friendly and helpful than they have been for many years. Railway traffic and earnings are now showing a tendency to decline, but the outcome of the national election and other conditions indicate that the period of declining business probably will not last long and that the railway and railway supply industries will soon enjoy with the other industries of the country a new era of prosperity.

Give Credit Where It Is Due

During the past few weeks, the railroads have handled an increased volume of traffic in spite of the inadequacy of their facilities and have at the same time reduced the car shortage. While railroad officers have every reason to be proud of the part they have played in setting this record, they should not overlook the fact that employees in the operating department are entitled to a share of the glory. The whole-hearted co-operation of the rank and file is essential if the maximum capacity of the transportation machine is to be realized. There are in most cases no pecuniary incentives for men to put forth extra effort to increase their efficiency and when, by their co-operation, they enable the management to set a new record, they deserve unstinted praise. Despite the barrier that labor organizations have tried to erect between the officers and the men, a word of official appreciation is seldom unwelcome. Statistics are used too often merely for analyzing operation though they have great potential possibilities for raising the morale of the organization, if railroad officers would learn to use them as a means for appealing to the universal American instinct which regards a record only as a mark to be excelled.

Graft in Ticket Offices

The dismissal of seven ticket sellers at the Pennsylvania Station in New York on October 31 for accepting gratuities from passengers for favoring them in the matter of space in Pullman cars, has attracted no small amount of attention. It has probably attracted considerably more attention than is justified, for we cannot believe that any considerable amount of this wrongdoing has been going on, taking the country as a whole. Nevertheless, there is no doubt that

many railway patrons really do have the idea that it is easy to get desirable accommodations if one goes at the matter in the "proper" way. The fact that these men have been discharged must therefore be regarded as of salutary influence. Ticket selling is one of the most difficult functions which a railway has to perform and in ticket selling more friends can be made by correct methods and more enemies by incorrect methods than in almost any other way. This indication that the railways will not tolerate unfair dealing in the relations of their employees with the public will not only serve as a warning to misguided employees and misguided passengers but it will also be regarded with favor by the public in general.

Winter Operation and Car Movement

To increase the average movement of cars to the extent that many roads have done recently is a performance of no mean magnitude, even during the exceptionally favorable weather of the past few weeks. To still further increase this movement or even to hold it at its present high level during the next few months will be an even greater achievement. The interruptions to service and the general slowing down of operations with the arrival of cold weather are known to all railway men. The snowfall in the northwest and the storms which have swept over the central states during the last few days, bring one to a realization of the fact that winter is here and that the railways must be prepared to meet its ravages. At the same time the demand for the prompt and uninterrupted movement of coal, grain and other traffic is still insistent and will become more so with the arrival of cold weather. It is therefore a vital necessity that operating officers take all reasonable precautions to avoid interruptions to service owing to adverse climatic conditions and to keep their forces keyed up to the present high pitch in the movement of cars. It is the easy thing to attribute delays to traffic to adverse weather conditions. It is the difficult but nevertheless necessary duty of every operating officer to realize his responsibility to his company and to the public to maintain uninterrupted service, bearing in mind that the goal of an average of 30 miles per car per day set by the railway executives in July was not fixed by them as a fair weather mark but as an average for the entire year, winter as well as summer.

The Present Tendency of Prices

One characteristic of all periods of reducing prices is an increasing spread between the prices of the basic materials and those of the finished products. Thus, the cost of a pair of shoes at the present time does not reflect the fact that one grade of hides has dropped from 51 cents to 24 cents in the past year. This tendency is now to be observed also in the railway supply market. With ingot copper at 15 cents, we do not find that the finished copper articles are quoted much below the prices in effect when ingots cost 24 cents a pound. Para rubber has dropped from 53 cents to 23 cents in the last year and cotton from 38 cents to about 23 cents, yet air hose, for instance, has not reduced in like proportion. Beyond doubt a permanent reduction in the price of the raw material must be reflected eventually in that of the finished product, but there are several basic reasons why there is a lag in the prices of the manufactured article. The manufacturer is governed by the cost of the material actually used in the product he sells, not in the quotation of the material on a particular day. Moreover, he has no way of telling when the lowering tendency will be supplanted by an upward trend. In other words, he is bound by the tendency of prices over a period of time instead of the influence of the passing moment. This is a period of readjustment and any tendency toward drastic changes would easily produce disastrous results. While the reductions in the prices of basic materials which have occurred probably forecast a downward trend in the future in the prices of finished products, the present condition of the railroads makes it inadvisable to withhold large purchases of supplies while awaiting such reductions in prices.

Progress in the Safety of Travel

November 5 ought to mark a definite step in the progress of the railroads of America toward their goal of complete safety to every passenger. This is the date appointed for the first conference between the railroads and the government on what shall be done with Section 26 of the Transportation Act, 1920. The section in question empowers the Interstate Commerce Commission to enforce by law well-known measures of safety, which are already approved by progressive railroad managers and engineers, but which have been neglected because of the difficulties attending their accomplishment. The language of the Act is not so specific as that which we are here using; but our words, it will be agreed, are appropriate, for, in line with what has been done by the Railroad Administration, and by the Commission itself, the present purpose of the Commission is, without doubt, (a) the promotion of the use of the space interval and (b) the perfection, for general use, of some apparatus which shall be an antidote for absentmindedness on the part of locomotive runners. The extension of the use of the space-interval principle requires no new ideas; only money. And the same is substantially true of the other problem; the cost is the crucial question; ideas are plentiful. It will take time, in this field, to develop the best and get rid of the second best, but the inventors and the government and railroad committees have done a great amount of useful preliminary work, and real progress may now be looked for. The New York Public Service Commission, Second District, is already working on the automatic train-stop problem. It is interesting also to note that the British Government has just appointed a committee on automatic train control, with Colonel J. W. Pringle, the veteran inspector, as chairman. England, like America, has long been considering automatic stops, but with the same universal hesitancy. Jealousy between railroads is said to have been one of the causes of delay over there; even jealousies within individual railroad official staffs. How true this is we do not know. It is a satisfaction to feel that nothing of that kind has made trouble in this country. When we can get over the feeling that we are too poor to indulge in refinements, we shall begin to move.

Electrification and Interchangeability

One of the principal arguments against the adoption of electric traction in this country has been the lack of interchangeability due to the different types of equipment used on the present electrified lines. An answer to this question for the English railroads has been recommended by the Advisory Committee on Electrification of Railways, appointed some time ago by the British Minister of Transport. An abstract of the first preliminary report of this committee appears elsewhere in this issue. Its salient feature is a recommendation in favor of the use of direct current power with either overhead or third rail collection. American engineers who have discussed the problem of electrification realize that this question must soon be decided for the railroads in this country. The time will come when the number of systems of electrification must be reduced to a minimum. However, we must realize that railroading in the United States is a

problem with greater ramifications than in England, and to decide on a system before those in use have been thoroughly tried out, would not be wise. In England the electrifications have been mainly of the suburban type using multiple unit equipment and with one exception for passenger service. The English railway authorities will be commended for their forehandedness, but their decision should not be given too much weight in this country because of the different conditions involved. It may prove desirable to adopt more than one system in this country. The number of electrification systems and different types of equipment will eventually have to be reduced to a minimum but there is still work to be done in the way of development before final decision can be made.

Equipment Orders in October

There were reported in the Equipment and Supplies column in the issues of the *Railway Age* in October orders for 81 locomotives, 4,888 freight cars and 9 passenger cars for Class I roads. The detailed figures for October and the cumulative figures for the first ten months will be found in the Equipment and Supplies column in this week's issue. It will be noted that although the total freight cars ordered reported in the issues in October, namely—4,888—was by no means a large figure, it was, nevertheless, sufficiently large to exceed the totals of each of the nine preceding months with three exceptions—February, April and May. Despite the small number of freight cars represented in the October orders, they were within 1,000 of being equal to the orders reported in July, August and September. The locomotive orders placed in October by Class I roads totaled 81, which made October one of the low months of the year. The passenger car orders were negligible, orders for nine only being reported. The cumulative figures for the ten months show that thus far this year orders have been placed for 45,142 freight cars, 1,484 locomotives and 823 passenger cars for Class I roads. It has been noted in these columns on a number of occasions that the equipment orders for 1920 are likely to reach only a rather low level. The October figures show no reason for changing this supposition. It was brought out at the meeting of the Association of Railway Executives in New York on Friday last that 135,000 freight cars had been retired from service since the termination of federal control and that the number of freight cars now in actual use is less than during federal control. The figures on orders for this year show to how small an extent this handicap is being overcome. They emphasize how important is the program of the Association of Railway Executives for improving freight car service, but they also indicate that plans must be formulated shortly for taking care of the equipment requirements so that the efficiency which is sought may be properly retained in the future.

The Heat Treating Equation

It sometimes happens in railway shop practice that a certain cutting tool does extraordinarily good work. Heavy cuts can be taken at high speed and the tool lasts a long time. With an accurate knowledge of conditions while heat treating, there is no reason why this tool should not be duplicated and all shop tools, in fact, brought up to the same high standard with a resultant increase in shop output. The possibilities in speeding up locomotive and car repair work make this subject of present interest and importance to mechanical department officers. Three vital factors enter into the manufacture of efficient shop tools: namely, quality of steel, tool design and method of heat treating. By maintaining the first two factors constant and varying the third, it is possible to arrive at a method of heat treatment that gives the most satisfactory results. Tool breakage can be practically eliminated and the maximum cutting efficiently secured. The heat treating of tools in railway shops as in other machine shops assumes the form of an equation: Cost of steel + labor in machining + overhead + poor heat treatment = scrap steel. In the case of plain carbon steel, the real loss is the cost of machining plus the overhead charges, but with tools made of high speed steel worth three or four dollars a pound, the cost of material wasted represents a larger loss. Probably the greatest loss of all is due to equipment delayed in shops indirectly caused by soft or broken tools. With the proper furnace equipment, including pyrometers and correct methods of heat treating, it is possible to produce efficient cutting tools. In this case the heat treating equation may be restated: Cost of steel + labor in machining + overhead + proper heat treatment = tools of maximum efficiency. From a negative point of view, this means that there is no loss in material, labor and overhead charges due to spoiled tools. From a positive point of view, it means increased production and shop output with a larger number of locomotives and cars available for service when most needed.

Checking Up Locomotive Efficiency

Locomotive efficiency is a subject that receives a great deal of attention in the abstract. Methods of increasing capacity and decreasing fuel consumption are discussed at length and railway officers are always alert to take advantage of new devices that promise improvement. Without detracting in the least from the importance of keeping abreast of every new development, it seems pertinent to inquire whether the average railroad gives enough attention to the matter of securing the best results from existing equipment. Locomotive design is not an exact science, and the few roads that have adequate facilities for testing their motive power usually find that some minor changes from the original design are absolutely necessary to secure the best results. In some cases, a new design, though prepared with the utmost care, has proved so uneconomical that the railroad after testing a sample engine has never built another like it. The deficiencies can only be determined by trial, preferably on a test plant, or in road service with a dynamometer car. Are the railroads getting the full benefit of such tests? The Pennsylvania is the only road in this country that has a test plant. The one at the University of Illinois is available to any railroad but has been used for only two series of tests. The roads that are using dynamometer cars consistently to determine what service is actually being obtained from locomotives could be counted on the fingers of one hand. No better evidence of the loss that railroads are undoubtedly experiencing if they are not using dynamometer cars could be offered than the results which one railroad obtained when it placed a dynamometer car in service. On a Mikado type locomotive, which was performing with no complaint from the crew, an exhaust tip 3/8 in. smaller in diameter increased the firebox temperature 400 deg. F. and resulted in a saving in coal amounting to $57,000 a year. The exhaust tips in these locomotives were in accordance with American practice and if the test had not been made, this serious loss would not have been discovered. An adjustment in the valve gear resulted in an increase of 7.8 per cent in the drawbar horsepower. On another locomotive, by making several changes as indicated by the test data, the fuel consumption was reduced 9.8 per cent and the engine was enabled to haul three additional passenger cars with less fuel and water than it had formerly used with the smaller train. A road that does not test every new order of locomo-

tives is buying a pig in a poke. The best way to insure that the maximum capacity is secured with the minimum fuel consumption is to conduct thorough tests. Many of the class I roads will spend over $10,000,000 for fuel in 1920. Surely no road that spends such a sum for fuel can allow the slight expense involved to prevent it from realizing the benefits of test plant or dynamometer trials of locomotives.

Increase the Per Diem Rate

The American Railway Association will at once take another letter ballot on the question of advancing the per diem rate charged by the railways for the use of one another's cars. The proposition submitted will be that the rate be advanced from 90 cents to $1.00 per day. Recently a vote was taken on advancing the rate from 90 cents to $1.10 a day. To raise the rate requires the votes of more than one-half of the railways belonging to the American Railway Association, and this one-half must own two-thirds of the freight cars. On the proposition to advance the rate to $1.10, 208 railways owning 1,454,582 cars voted favorably, while 152 railways owning 929,481 cars voted unfavorably, and 23 railways owning 22,600 cars did not vote. It will be seen that a majority of the railways voted favorably, but that they did not own the necessary two-thirds of the cars. The letter ballot now to be taken ought to result in the $1.00 rate being adopted. The cost of owning a car has greatly increased, not only within recent years but within recent months, and is still increasing. Furthermore, owing to the recent advances in freight rates and increases in the efficiency with which cars are being utilized, the earning capacity of each car has been increased. Therefore, not only justice to the owning lines, but the increased value of each car to the railway using it demand that the rate shall be advanced. In addition, the higher per diem rate would have some tendency to stimulate relocation of cars, and the more cars there are on the owning lines the more of a tendency there will be for individual lines to improve the condition of their cars and buy more of them. The $1.00 rate is the one which was originally recommended by the general committee of the Transportation Division of the American Railway Association. At a time when the railways are receiving higher freight rates, and demanding higher demurrage rates from shippers than ever before, consistency requires that they shall put the rate that they charge each other for the use of cars on a more reasonable basis.

Compensation Is the Most Important Factor

Any discussion of the employment of engineers in railroad service leads eventually to the question of compensation and owing to the importance of this issue it must be met squarely. To point out to the college graduate that he has an opportunity to become chief engineer or vice-president does not give him the information he desires as to the desirability of railroad employment. He must have something more tangible. This subject has recently had specific recognition from most of the roads, but should be kept well in mind. To study it intelligently, the engineering forces must be divided into two classes: those employed in administrative work, which places them in line for promotion to supervisory positions, and those engaged in purely scientific or technical pursuits. For the first class the question of compensation to engineers becomes submerged in the larger problem of adequate salaries for the supervisors and their immediate superiors. If these are being paid in proportion to their worth the problem of the engineer is largely solved. However, even here the pay in the preparatory positions has some influence. This, when considered with the average rate of advancement, must insure an aggregate compensation over a period of, say, 10 to 15 years that is commensurate with that obtainable in like positions in other lines of engineering work. In the case of the technical engineer employed by the railroad, advancement is more rapid for two or three years, after which promotions are likely to be slow. Consequently, the problem is largely one of market prices and it makes little difference whether the men are hired as beginners or as experienced men, the market values are pretty well established. Therefore, the employer will get just about what he pays for—a cheap man for a cheap wage or a good man for a good wage. Probably the greatest shortcoming of railroad employment for this class of men has been the establishment of some fixed rate as a standard for a given position, allowing the department head no latitude in rewarding the man who shows special ability. A recognition of the fact that there is a definite market rate, coupled with some plan of increasing the compensation where it is most merited, will not only make railroad employment attractive but will effect a reduction in engineering costs. In no branch of service is there greater merit in the axiom that a cheap man costs more than a high-priced one.

Automatic Train Control

FOR A GOOD MANY YEARS more or less agitation has gone on for the development of some form of automatic train control to act as a check on an engineman should be fail to heed fixed signal indications, as many accidents have occurred from such momentary lapses on the part of enginemen. The government and certain railroad technical societies have appointed committees to study this question, to draw up requisites and otherwise to determine what such devices should be required to do under actual service conditions. Legislation has been advocated in the past to make it compulsory on the part of the railroads to install such additional safeguards. However, but little progress was made with the development or use of train control devices, except by certain individuals working to perfect something which would act as a connecting link between the fixed roadside element and the moving train.

Now, automatic train control is a reality; after an investigation made by a committee appointed by the former United States Railroad Administration it reported that there were a number of devices which were developed by private initiative to such a point that they were applicable for use on railroads; in addition, the Transportation Act of 1920 empowers the Interstate Commerce Commission to order such installations.

At a joint meeting of the Western Society of Engineers and the Chicago Sectional Committee of the Signal division, American Railroad Association, in Chicago on October 21 this subject was thoroughly discussed from the government, the railroad, and the train control companies' standpoint, the need for such devices being well summed up in the statement of W. G. Bierd, president of the Chicago & Alton, in which he said, "It is well known to operating officers that there is a great necessity for something much better, more perfect and more reliable than at present in use. * * * As long as we employ men and trust to their agency we must expect these failures to occur. * * * So we must look for an automatic train control or train stop."

The problem now is, not merely the development of apparatus to perform the functions required, but the working out of plans whereby the apparatus will work interchangeably as between various roads which may be equipped with different devices. As an example, one road operates over, or has trains of other lines running over parts of its sys-

tem, to the number of 15 or more. This brings up the question of the location and clearance of roadside members and train apparatus. Railroad engineers in co-operation with train control men will have to work out changes which may be shown to be desirable in some cases after the apparatus has been installed and in service, as service operation often develops conditions which are not encountered in laboratory tests. It should be realized by railroad officers in general that train control affects not one department but several and this is recognized by the American Railroad Association in its appointment of a committee composed of operating, mechanical, maintenance of way and signal men to co-operate with the Interstate Commerce Commission in the administration of that section of the Transportation Act dealing with automatic train control. The development along this line makes it essential that those railroad officers directly affected give this question more serious study than has been devoted to it in the past.

The Part of Organized Labor in the Recent Election

THE RESULT of the recent election is a crushing rebuke for organized labor, or at least for the heads of the principal railway and other labor organizations. The American Federation of Labor, the Plumb Plan League and the various railway labor organizations openly opposed the election of Senator Harding to the presidency and the re-election of senators and representatives who had voted for the Esch-Cummins Bill. The Plumb Plan League and the Railroad Brotherhoods were especially bitter in their attacks upon men who had supported the Esch-Cummins Bill. For example, the heads of the "Big Four" railroad brotherhoods issued a special letter to their members in Iowa urging them to oppose the re-election of Senator Cummins. They recalled the part he had taken in framing and advocating legislation against strikes on railroads and went so far as to say "If Senator Cummins upon such a platform is elected from Iowa we can assume that it is because the citizens of Iowa desire such legislation, and many such citizens are members of the railway employees organizations." Glenn E. Plumb and other spokesmen of the Plumb League were persistent and vitriolic in their attacks upon Senator Harding.

If we may judge by the election returns, the only effect of the efforts on the part of organized labor, and especially of the railway labor organizations, to influence the election was to increase the vote cast for the men that they opposed. It is only fair to take the heads of the "Big Four" railroad brotherhoods at their word and accept the result in Iowa as indicating that the people desired and have endorsed the very kind of legislation which the labor organizations opposed when it was pending in Congress and have denounced since it was enacted. The implications of the outcome are even broader than this. One of them is that the American public resents the action of any class which attempts to use its supposed political influence to promote its own selfish interests without consideration of the welfare of the public as a whole, and that such class activity makes more votes against than for the policies that may be favored by the particular class.

Another plain implication of the result is that the American public is overwhelmingly opposed to radical measures such as government operation or Plumb Plan operation of the railroads. The American Federation of Labor first endorsed government ownership of railroads and then went into the political campaign and supported Governor Cox. The American public, including apparently a majority of workingmen themselves, went to the polls on election day and voted overwhelmingly against the candidates that the American Federation of Labor supported and thereby against the policies that the American Federation of Labor advocated. The outcome will hardly increase the political influence of organized labor at Washington during the next administration. It should be a lesson not only to organized labor but also to public men who in past years have allowed themselves to be intimidated by the threats of organized labor to destroy them if they did not do its bidding.

Largest Month's Freight Movement in History

STATISTICS compiled by the Bureau of Railway Economics disclose the fact that in August the railways moved more freight not only than in August of any previous year, but more than in any previous month in any year in history. This seems a conclusive answer to charges which have been made by W. G. McAdoo and others that the railways have been inefficiently operated since they were returned to private control, and that they can be operated with maximum efficiency only under unified government control. The number of tons of freight moved one mile in August was 42,706,000,000. The nearest approach to this ever made before was in August, 1918, when the number of tons moved one mile was 40,776,000,000.

The detailed figures regarding the way in which this record-breaking achievement was accomplished are very interesting and significant in view of the efforts the railways have been making for some months to increase the efficiency of operation. The average miles each freight car was moved daily in August was 27.4. This was the greatest mileage ever attained in any month except in May, June and July, 1917, under private operation. In other words, in none of the twenty-six months of government operation was this record for car movement ever equaled. The average tons handled in each loaded car in August, 1920, was 29.8, a record exceeded only in the months of July, August and September, 1918, when shippers for patriotic reasons were giving the railways the highest degree of co-operation.

The best test of the efficiency with which the country's freight cars as a whole are being utilized is the average number of tons of freight moved daily with each car. This figure is arrived at by combining the average number of miles each car is moved daily with the average tons handled in each loaded car. The average number of tons moved one mile daily with each car in August, 1920, was 526. This record has been surpassed only in August and September, 1918, when the average load per car was the highest ever reached, and in June, 1917, under private operation, when the average miles per car per day was almost the highest ever reached. The average number of tons moved one mile daily with each car in August, 1918, was 534; in September, 1918, 535; and in June, 1917, 542.

The statistics used in making the computations by which these various units of efficiency are arrived at include cars which are in bad order as well as those which are in serviceable condition. As an aftermath of government control the number of cars in bad order in August, 1920, was larger than in either 1917 or 1918. If only cars which were in good order and actually in service were included the statistics probably would show that more service was obtained from each car that was in good condition in August, 1920, than in any previous month.

The amount of freight moved in September probably will be found to have been less than in August, but the amount moved in October undoubtedly will be found, when all the

statistics are available, to have surpassed even that in August. In the week ending October 9 the number of cars loaded was 1,009,787, while in the week ending October 16 it was 1,005,000. The number of carloads moved in each of these weeks surpassed that handled in any week in August, and it is a fair assumption that there were further increases in the efficiency with which each car was used.

Mr. McAdoo referred critically in a recent address to the fact that the car shortage reported on September 1 was over 140,000. The car shortage, when there is one, usually increases in the late fall and early winter, but on October 16 it had been reduced to 69,000. This doubtless was partly due to the fact that the demands of traffic were beginning to slacken, but even more to the fact that the amount of traffic handled was still being increased.

It is a curious thing that the critics of private operation should continue to talk of its inefficiency, as compared with government operation, at the very time when records are being made which seem to demonstrate more completely than ever the superiority of private over government operation. However, if the public can be made to understand and appreciate the significance of such facts as those regarding the remarkable results which recently have been secured by the railways, there need be no fear of the effect of criticisms emanating from men who apparently are determined to find fault with private operation no matter what results are obtained.

September Earnings Do Not Fully Reflect Rate Adjustment

RAILWAY EARNINGS for September, as indicated by the reports covering a majority of the roads that have thus far been filed with the Interstate Commerce Commission, make an unsatisfactory showing for the first month in which the roads are again operating without a guaranty, failing to reflect the percentages of increase in rates allowed by the commission, to say nothing of the increase in traffic.

Estimates based on the net operating income of roads operating approximately half of the mileage of the country indicate that the roads as a whole for the month will fall about $30,000,000 short of what they should earn for net in September to produce a 6 per cent net return on a year's business. Part of the failure to realize the full increase, of course, is to be attributed to the failure of a large number of states to allow corresponding advances for intrastate traffic, and also a considerable volume of traffic was handled in September that moved on the old rates because it was started before their effective date, but it is impossible to estimate how much these factors contributed to the result. The fact that operating expenses increased by a larger percentage than the operating revenues indicates that there may have been an unusual amount of maintenance work done in September.

At any rate the result serves as a reminder that the net operating income account even as late as September this year was still affected by the underestimate of expenses made by W. G. McAdoo in May, 1918, at the time the last general advance in rates was made for the purpose of meeting what was then figured as the probable increase in expenses.

Mr. McAdoo has recently sought to place upon the return of the railroads to private management the responsibility for the large deficit incurred by the railroads this year and upon the transportation act the blame for the increases in rates. If he had not so often found it easier to depend on the principle that you can fool part of the people all the time and all the people part of the time than upon critical analysis, he might not care to make such rash statements. An analysis of the figures would have shown him that the cause for the ever-narrowing margin between railway expenses and earnings can be easily traced to the fact that the general rate level had not been changed, until August 26, 1920, since the time he made the estimate referred to.

In May, 1918, Mr. McAdoo was about to put into effect what was then considered a large increase in wages, about $300,000,000 to $400,000,000 a year. He also knew of some other increases in items of expense, notably fuel. The increases in wages and the increases in rates which it was figured would be necessary to meet them and the other increases in costs were announced to the public simultaneously on May 25. The increases in wages, however, failed to satisfy the employees and they were followed by a procession of supplemental wage awards throughout the entire period of federal control. This naturally rendered the rates too low but because of the spirit of optimism, accompanied by some vacillation which pervaded the Railroad Administration, the rates were not further advanced and the result was a constantly increasing deficit. It was over $200,000,000 in 1918; it was over $400,000,000 in 1919 and in the first eight months of 1920 it was over $600,000,000, having been increased by a further advance in wages made after the roads were returned to private management, of which some $200,000,000 was made retroactive to May 1 to be paid out of the earnings under the old rates before they could be readjusted by the Interstate Commerce Commission to meet the conditions which had been increasing expenses for over two years.

Undoubtedly the estimate of expenses which was made in May, 1918, was as accurate as it was possible to make it at that time. Mr. McAdoo certainly had plenty of competent assistance and there is no criticism to be offered on the point that they could not see far enough into the future. The only point is that after the estimate had been demonstrated to be too low on the side of expenses no effort was made to readjust the other side of the account correspondingly and a definite policy was adopted of continuing to meet the resulting deficits out of the taxes, while the Railroad Administration hoped in vain for offsets to result from unification. Meanwhile some of those who were advocates of that policy are attempting to criticise private management for its logical consequences in spite of the fact that most of the units of railway operating expense that now make up the increased total, as well as the rate units that are undeniably an important factor in the total earnings, were fixed during the period of federal control.

For example, the Interstate Commerce Commission has recently reported that the average cost of freight train operation per mile (selected accounts) was $1.89 in July, 1920, against $1.54 in July, 1919, an increase of 35 cents in a year, while the cost in February, the last month of government operation, was $1.91, showing that more than all of the year's increase occurred during the period of federal control and that there has been a slight decrease since February.

The decrease is probably due to the fact that train operation in the summer is normally cheaper than in winter, but at least private management is not responsible for much of the increase of 35 cents per mile in a year in which there was an increase of 37 cents in the seven months while the roads were still being operated by the government.

The increases in expenses which occurred during the war period are likely to last for some time and the September earnings make it apparent that it will be necessary to await the October returns before it will be possible to ascertain with anything like accuracy the effect of the rates which have at last attempted to catch up with the expenses.

Western Maryland

ONE OF THE MOST important features of the conduct of business by the Western Maryland is the fact that it is a relatively small and comparatively new line in highly competitive territory. Its lines, briefly speaking, extend from Baltimore westward approximately parallel to the northern boundary of Maryland. From Cumberland it has a line extending southwestward to the coal fields of West Virginia and one northwestward to Connellsville, Pa., where connection is made with the Pittsburgh & Lake Erie, whereby the road is given a traffic route from the Pittsburgh district. The total mileage operated is 708. From this resume it can be observed that the task of the officers of the road is primarily to build up the traffic in coal and to make the most of the through traffic route over its line and the Pittsburgh & Lake Erie from Pittsburgh to Baltimore. During federal control the road had to forego this work, so that now on the return to private control the road is presented with the task of taking up the work where it left off in 1917 and in addition of rearranging business from the basis it was on under government operation.

The Western Maryland's most active competitor is presumably the Baltimore & Ohio. During federal control, however, it was placed under the jurisdiction of the federal manager of the Baltimore & Ohio, and was operated as a part of that system. At the same time, the line of the Cumberland Valley was used as a connection between the Western Maryland and the Philadelphia & Reading instead of that portion of the Western Maryland's own line hitherto utilized for that service.

The report recently issued to the stockholders is written with these facts in mind. It draws attention to them and says that "These disarrangements of operation and transportation, while advisable in the best interests of a comprehensive regional operating unit, nevertheless resulted during their continuance in a complete dismemberment and disintegration of the Western Maryland transportation system." The report, therefore, is made to cover both years of federal control, 1918 and 1919, and it does not attempt to reproduce the federal manager's figures of operation during that period.

Other figures are available which are of assistance in showing how the road fared. The standard return of the Western Maryland was set at $3,075,048, but was later raised to $3,315,439. In 1918, the road (operated, it will be borne in mind, as a part of the Baltimore & Ohio) had a net operating deficit of $492,469 and in 1919 of $161,534. Some information may also be derived from the report of the earnings of the property for September, 1920. Of course, too much should not be made of the earnings for one month. The September earnings, however, are of interest as an indication of what the road may be able to do under the new rates and the road has given them an additional value by including a comparison with September, 1917, which was a good month. The comparison shows that in September, 1920, the operating revenues were $2,193,174 as compared with $1,205,513 in September, 1917. Operating expenses in September, 1920, were $1,749,802—nearly double those of September, 1917. The net operating revenues, however, were $443,372 in 1920 as against $389,671 in 1917. The net income after fixed charges in September, 1920, was $182,832, or $162 less than in September, 1917. These figures would seem to indicate that the business of the road is getting back in its former channel and that progress is once more being made along the lines of building up business which characterized the road under the administration of C. R. Gray.

This building up of traffic is a matter of importance on any road. It is a matter of special importance on the Western Maryland. This is indicated in one way by a brief resume of the capitalization of the road. On December 31, 1919, it had outstanding common stock amounting to $49,426,098; second preferred of $17,742,100, first preferred of $9,999,000—a total stock capitalization of $77,167,198. The bonded and secured debt totaled $60,840,561. The interest on the last named has been earned with a fair margin in recent years. No dividends, however, are paid on the stock, either common or preferred. The first preferred stock is 7 per cent cumulative but these dividends have not been paid. The Western Maryland, despite this situation, is by no means considered a poor road. This is shown by the financing it has done this year and by the progressive policy it has been able to adopt in the manner of equipment. The Western Maryland took 300 of the United States Railroad Administration standard 50-ton single-sheathed box cars. It was not allocated any open top equipment; in fact, it has sufficient open top equipment so that if it has 60 per cent of its ownership of open top cars on line it can usually meet all traffic demands. None of the standard locomotives were allocated to the Western Maryland. It has, however, ordered 40 heavy Consolidations recently. It has also secured two new car floats, each of 26 cars capacity, for its terminals at Baltimore, the purchase of which it financed itself at a rate of 6 per cent. In addition to these it is rebuilding its coal pier at Baltimore which was burnt down, and expects to have it completed by the end of the year. To assist in financing the purchase of 20 of the locomotives, extensions to the coal pier and other improvements, it has secured a loan from the loan fund of $1,372,000. The cost of the locomotives outside of that part paid for from the proceeds of this loan was financed at 7 per cent. Taking the cost of all the items mentioned, the officers have figured out that their total financing for these improvements has been at the rate of 6.4 per cent. These facts show that the Western Maryland is making an effort to continue the progressive policy adopted while C. R. Gray was president. The low rate at which the improvements have been financed will also be regarded as a favorable indication.

New Books

Text Book of Materials of Engineering, by Herbert F. Moore, research professor of engineering materials, University of Illinois. 6 in. by 9 in., 315 pages, illustrated, bound in cloth. Published by the McGraw-Hill Book Company, 239 West Thirty-ninth street, New York.

In addition to a general revision of the text, the new edition contains an entirely new chapter on concrete by Professor Harrison F. Gonnerman, which goes into considerable detail concerning such of the more recent developments as Abrams' fineness modulus and Edwards' surface area method for proportioning concrete. A chapter has also been added on rubber, leather, belting, rope, etc. This text book covers the mechanics of materials, their manufacture, use and testing and since it is limited to 315 pages, the treatment is essentially general or elementary. That it is intended primarily as a text book is indicated by ten pages of questions on the various chapters. However, the book will serve as a ready reference to the man who desires accurate, general information covering the entire field rather than the minute details of some particular branch of the subject. The work is up-to-date as indicated by the fact that the third chapter is devoted to repeated stresses, a subject also given some space under the subject of testing. The chapter on working stresses contains a valuable summary of the specific materials used for various classes of structures and equipment. Thus, one paragraph tells why many parts of railway equipment are now being made of steel castings. Of the specific materials, iron and steel are covered in 80 pages, non-ferrous metals in 12, timber in 22, concrete, stone, brick, etc., 70.

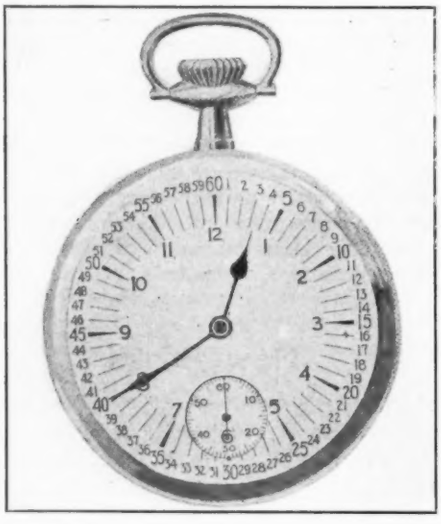
Letters to the Editor

The Montgomery Safety Watch-Dial

TOPEKA, KAN.

TO THE EDITOR:

In your report of the annual meeting of the National Safety Council, October 8, page 617, you unconsciously do an injustice in voicing the opinion of Webb C. Ball as to safety dials for watches. Mr. Ball styles the Montgomery safety dial "freakish and confusing." The highest railroad officials in America, government officials, watch manufacturers, watch inspectors and over half a million conductors, engineers and employees in all classes of service, who use the [Montgomery] safety dial in daily practice, certify that it is the greatest improvement made in watches in the past 50 years. As a safety device it is as essential as the watch itself. The safety dial is the standard for watches and clocks on the Santa Fe. Every clock on the system between Chicago and San Francisco on the west and Galveston on the south is equipped with the Montgomery safety dial. To



characterize such a device as "freakish" is a species of delirium. To the practical, thinking man, any device which offers a safeguard is worthy of employment in practice. The vital features on a watch dial are the *minutes*. The hour numerals are inconsequential in comparison. On the Montgomery safety dial the minutes are numbered, thus absolutely insuring correct reading. Large hour numerals interfere with quick vision of the minutes and are, therefore, objectionable. Criticism would surely and properly develop against the erection of obstructions which would prevent an engineer from plainly viewing block signals.

Mr. Ball says there should be "12 plain up-right Arabic figures to indicate the hours." I agree, and put them in evidence on the Montgomery safety dial. Mr. Ball places but 11 on the dial designed by himself (the 6th hour being, evidently, an outcast) and makes them so large that they hide the little dots which represent the minutes. Technically and legally the Ball dial is wanting. The dial is incomplete. The hour figure "6" is just as necessary from a legal standpoint as any other hour figures on the dial. It is an easy matter to misread the time on the dial Mr. Ball sponsors. A mistake of an even five minutes at such divisions as 17 when 22, 37 when 42, is easily made. Numbered minutes prevent such an error.

When "lights are dim and obscure" the safety dial presents the minutes, even though they might appear as a blur, in figures twenty times the size of the dots on the Ball dial. The long lines on the safety dial lead the eye to instantaneous vision of the minute in figures at the end of the minute-hand, and only a blind man could fail to read the time correctly. For the farmer, or individual who only cares to read the time approximately, large hour numerals may afford satisfactory results, but for a railroad man, the minutes are the essential factors.

The safety dial should be adopted as the standard of the nation, because of its educational value. The people should be taught to read time as it expires, and not in advance of its possible occurrence. For instance, to quote the time as "20 minutes to 1," is a flagrant error. Correctly read the time would be 12.40. In the pleasure of Providence one o'clock might not arrive.

An improved watch, accurate and dependable, is an important and desirable article; but to equip such a watch with an antiquated dial, when a dial of pronounced utility is available, is a serious mistake. Mr. Ball arbitrarily bars the use of the safety dial on all railroads under his jurisdiction, except the Rock Island. The officials of that road would not be a party to a scheme which prevented the use of a safety device on their lines. It is true he posted a circular prohibiting the use of the dial; but rescinded the order at the instance of the president of the company. So far as I know, Mr. Ball is the only man in the country who is not enthusiastically favorable to the safety dial.

I do not manufacture watches and have no preference for specials, or various brands, to catch the unwary and increase the price. My inspectors are at liberty to sell any make of watch, even the Ball if one should meet our requirements. I insist upon timekeeping quality; specials, secret order brands, and watches camouflaged with all sorts of deceiving inscriptions are welcome, if they "run right."

The Santa Fe was the first railroad in America to adopt a system of watch inspection of genuine merit and the rules are copyrighted. For a quarter of a century this service has proved its worth, the company requiring 157 employees on salary to conduct the department. Inspection bureaus on other roads copy the Santa Fe service so far as allowed, and in this respect exhibit wise judgment.

The illustration of the Montgomery safety dial needs no comment.

H. S. MONTGOMERY,
General Watch Inspector, A., T. & S. F. Ry. System.

A Suggestion Regarding Maximum Loading

NEW YORK.

TO THE EDITOR:

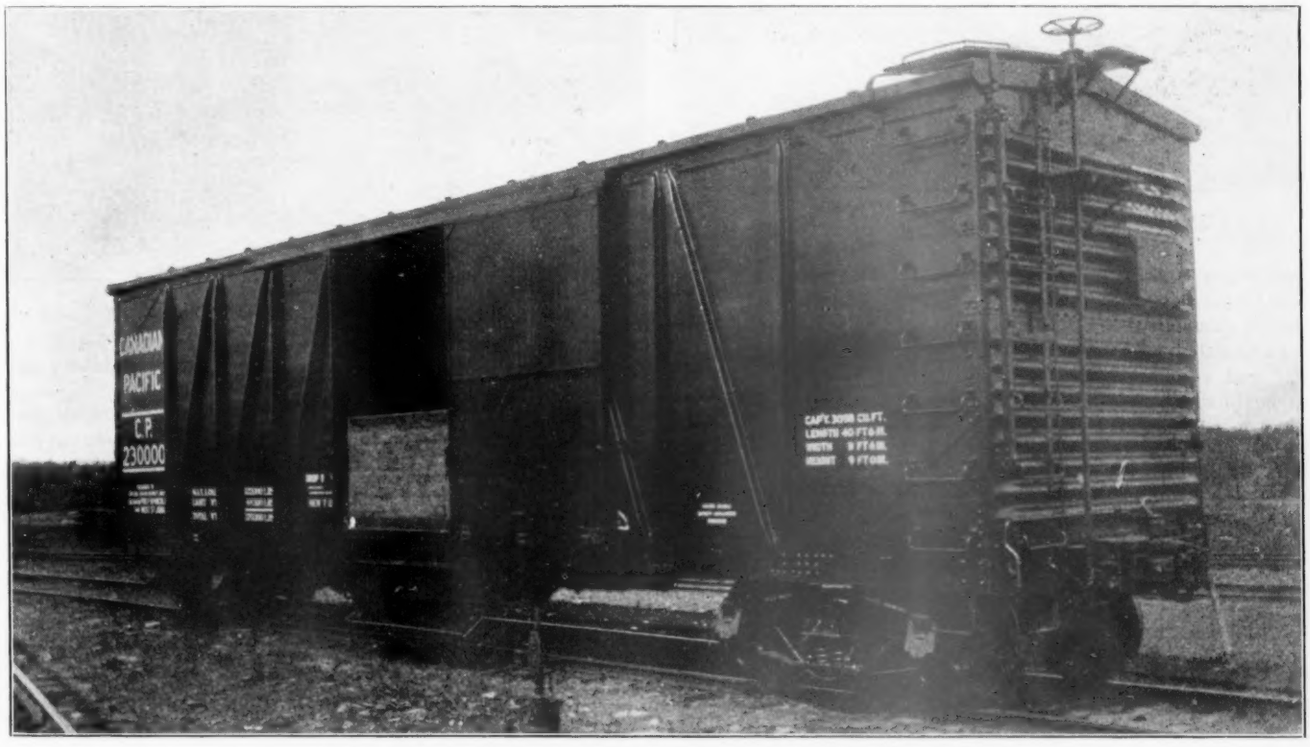
The most effective method that could be devised for accomplishing maximum loading of equipment would be to give the shipper and consignee an *incentive;* the shipper because it *costs* him something to load cars to capacity; the consignee because it costs *him* something to carry heavier stocks. There are two ways to do it: First, carry two columns of rates—a higher rate with lower minimum weight and a lower rate with higher minimum weight. There are examples of this in current tariffs. (See Trans-Continental eastbound rates on beans, canned goods and dried fruit and westbound rates on structural iron.) Second, carry one rate and minimum weight, with a rule providing that when cars are loaded over the minimum a percentage reduction will be applied on such excess. This has never been tried and there are some objections to it. So called "Equalizing," "Follow Lot" or "Two for One" rules should not apply to any rates so made.

RATE MAKER.

Canadian Pacific 60-Ton Hopper Bottom Box Cars

High Ratio of Load to Gross Weight in New Equipment Designed Especially for Grain Service

TWO FEATURES which make the equipment particularly suitable for service on a road with a heavy grain traffic stand out strongly in the design of the latest box cars recently placed in service by the Canadian Pacific. The limit load which the cars will carry is 60½ tons and the floors of the cars have special hopper bottoms which are designed to facilitate unloading of bulk material and to eliminate the need for temporary grain doors. Roads that have a heavy merchandise traffic generally consider that the cubical capacity usually limits the load in a box car and, therefore, a 40-foot car with a limit load of about 45 tons is most economical. However, where much grain and coal are carried in box cars, as is the case on the Canadian Pacific, the extra cost of the heavier car is, no doubt, more than offset by the higher ratio of load to total weight in a fully loaded 60-ton car. In these cars, which are 40 ft. 6 in. long, 8 ft. 6 in. wide and 9 ft. high inside, the ratio of load to gross weight is 71.4 per cent.



Box Car with Burnett Hoppers Built for the Canadian Pacific

Type of Construction

The cars are built with steel underframes, steel side frames, corrugated steel ends and outside metal roofs. The center sills consist of two 12-in. channels continuous from end to end of the car. The bolsters and cross bearers consist of pressed steel diaphragms with top and bottom cover plates, while the floor beams are pressed steel diaphragms. The decking, which is 2¼ in. thick, is secured directly to the center and side sill flanges by means of bolts.

The side frame consists of 9-in. channel sills, 6 in. by 3½ in. by ⅜ in. angle plates, 4-in. Z-bar door posts and U-shaped pressed steel posts and braces. The side sheathing, which is 1½ in. thick, is bolted to the flanges of the door posts, pressed steel intermediate posts and braces and to the flanges of the corrugated steel ends. Pressed steel posts and braces were chosen in preference to rolled sections because the ends have area for riveting without the use of gusset plates, and the ends of the braces can be brought much closer to the ends of the posts; also the pressed shapes provide superior support for the sheathing boards. The ends of the car are of pressed steel, each end being in two sections.

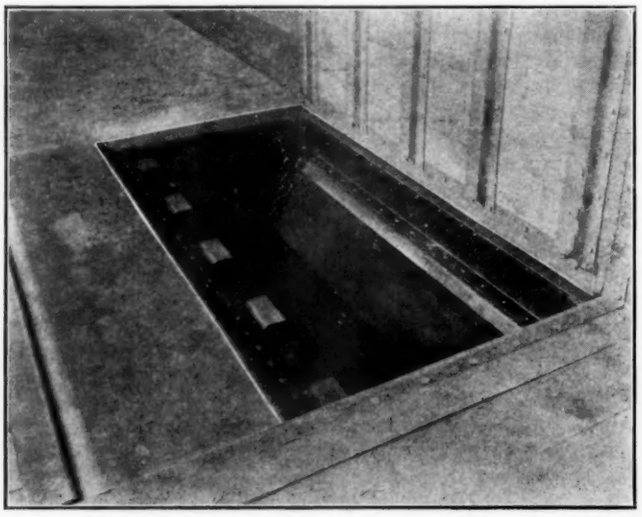
The roof is of the flexible outside metal type supported on metal carlines. All carline flanges are covered with strips of wood arranged to prevent the accumulation of dust that might be shaken down from time to time and possibly damage the lading.

Grain Hoppers

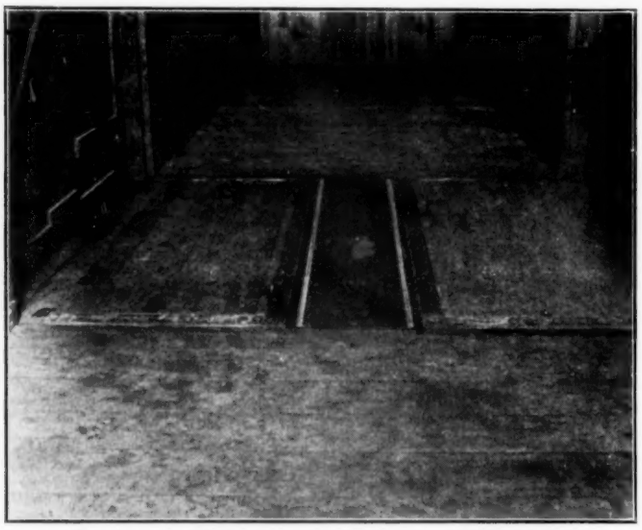
Hoppers of the Burnett type are located at the side door opening on each side of the car. When used for freight that cannot be dumped through the hopper the car has a solid level floor, the same as an ordinary box car; when grain coal, etc., are to be loaded the specially constructed sections of floor over the hoppers are turned up against the side door post. This arrangement allows the load to go directly into the hoppers, and also saves considerable temporary door lumber. When the cars are unloaded it is only necessary to remove the pin that locks the hopper doors; the doors open quickly by gravity and immediately a large percentage of the contents of the car discharges through the hoppers. The balance of the load may be shoveled to the middle of the car by hand, or if the unloading plant is equipped with

power shovels, as most elevators are to-day, the floor door on one side of the car is released from the door post and the cables are taken through the door opening as usual. The hopper doors have no operating mechanism, the doors being closed directly by hand and secured by a simple locking bar arrangement.

Special care has been taken to obtain a side door of satisfactory design. The interlocking front and back edges afford exceptional protection against weather and pilfering. The top edge is thoroughly weatherproof, yet so arranged that it cannot become blocked with ice. The bottom of the door is fitted with turned rollers that fit on a very substantial and rigidly supported track. This track is not likely to be blocked with ice but in case it should be the interference is plainly visible and easily removed. The location of the rollers at the bottom of the door does away with the binding or cramping so frequently noticed on doors suspended from the top.

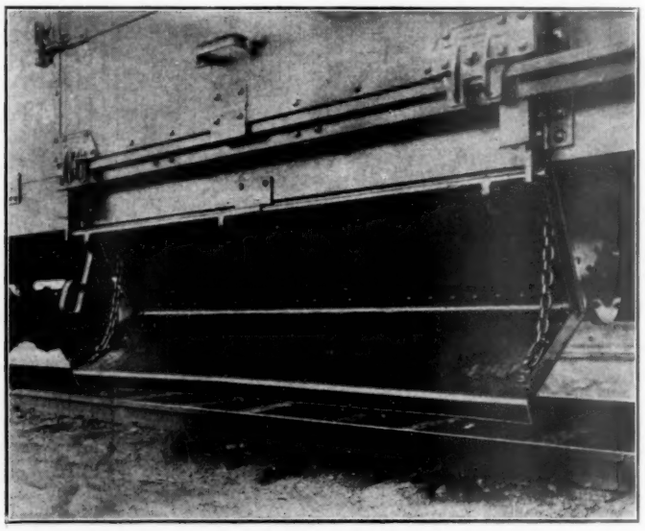


Floor Section Raised for Grain Loading



Interior of Car with Hoppers Closed

The brake arrangement includes a manually operated slack adjuster, which is a double safety device, as it enables inspectors to adjust the brakes to compensate for wear on brakeshoes without going under the trucks; and, as no truck parts are disconnected, the possibility of trouble due to oversight in replacing connection pins is eliminated. As the time required to adjust the brakes by this device is much less than with the old arrangement it enables inspectors to give attention to more cars in a given time, thus resulting in better maintenance and less detention. The hand brake arrangement is specially designed to be operative regardless of climatic conditions, this being accomplished by arranging the ratchet, pawl, etc., so that snow or ice on top of the parts will not interfere with their operation. The entire arrangement is located overhanging the end of the roof so that it is impossible for even the deepest snow to pile up underneath. The ratchet pawl is of the gravity type, and therefore the trainman is not required to use his feet for holding the pawl in position.



The Hopper When Open Discharges Outside the Track

The trucks are of the standard arch bar type with improved truck columns, spring plank and truck column fastenings, pinless brake beam hanger brackets, and four-point brake beam suspension. The railroad states that up to date this type of truck has given the best satisfaction in Canada.

Railroad Labor Board's Hearings

HEARINGS on the demands of employees of the short lines continued before the Railroad Labor Board at Chicago until October 28, adjournment being taken on that date until November 4 in order to allow representatives of the short lines and of the employees to return to their homes to vote on November 2.

The progress of the hearings up to and including October 26 was outlined in the *Railway* Age of October 29.

It became apparent early in the week that the presentation of testimony on behalf of the various short lines could not be completed for some time and on October 27, Chairman Barton announced that the Board would lengthen that and subsequent hearings so that adjournment would be possible on October 28.

Representatives of various short lines testified at the hearings on October 27 and 28 each witness outlining the physical, financial and other characteristics of his line: G. A. Wagstaff, superintendent of the Arizona & New Mexico; R. J. Lockwood, vice-president and general manager of the Apalachicola & Northern; Richard Doyle, assistant general manager of the Mississippi River & Bonne Terre; G. W. Hardin, vice-president and general manager of the East Tennessee & Western North Carolina; T. W. Parsons, vice-president and general manager of the Charlotte Harbor & Northern and others.

Transportation Act as Solution of Railroad Problem*

A Great Constructive Piece of Legislation, But Much Yet Remains to Be Done—Railway Labor a Preferred Class

By Daniel Willard

President, Baltimore & Ohio Railroad; Chairman, Advisory Committee, Association of Railway Executives

THE subject which I am to discuss is as wide as the world and is older than the recorded history of man, but I shall confine my remarks chiefly to one phase of the subject—namely, transportation by rail.

We have recently entered in this country a new epoch concerning transportation by rail, and the epoch of which I speak dates from the passage of the Esch-Cummins Bill, which is officially designated as "The Transportation Act of 1920." This act was passed by a substantial majority in each House of Congress after one of the most exhaustive inquiries into the subject matter ever made, and with the added knowledge acquired from 26 months' actual experience with government control and operation.

It was clearly the belief of Congress, as brought out in the debates during the preliminary discussion of this act, that the policy of private ownership and operation of the railroads in this country ought to be continued, and it was just as clearly the purpose of Congress, as finally expressed in the law, to enact legislation that would make private ownership and operation of the railroads possible. Personally I believe the Esch-Cummins Bill will accomplish that purpose. I do not say that the act in its present form provides a perfect and finished plan—one that need never be changed or revised, but I do believe that upon the whole, it is one of the most constructive pieces of legislation that has been enacted during my generation.

The first great epoch in the history of the American railroads may be said to have been brought to a close on December 31, 1917, when the President, acting under authority granted him as a war power, took possession and assumed control of the steam railroads in the United States and proceeded to operate them as if they were actually owned by the government. Undoubtedly there were many in this country at that time who favored government ownership and operation of the railroads as a national policy, and there were a great many more who opposed it, but all had opportunity to see how it actually worked during the period of federal control.

We then had a period of 26 months of federal control and operation, and on the first of last March we returned to the policy of private ownership and operation, but upon a basis as provided by the Esch-Cummins Act fundamentally different from anything that had ever before existed.

There are three outstanding features in the Transportation Act of 1920 which we may with profit consider at this time:

1. It was clearly the intent of Congress, as expressed in the act, that in the future, and especially in times of emergency, the 1,000 or more separate and independent companies should be considered as constituting in effect one national transportation system, and that their combined facilities and equipment, in such circumstances, and under some form of unified direction or control, should be used in such a manner as to best meet the transportation requirements of the public, always, of course, with due consideration for the rights of the owners of the property so used. It seems to be assumed by some that the advantages of unified direction or control of the railroads can only be realized in connection with the policy of government ownership and operation. That assumption, however, is wholly in error. As a matter of fact, the first actual demonstration in this country of the advantages of unified control was the result of voluntary action taken by the carriers themselves, nine months previous to the beginning of federal control.

On April 11, 1917, some 75 men representing at least that number of the more important railroad companies met in the city of Washington for the purpose of considering how and in what manner the railroads under the then existing conditions might be more effectively operated.

In furtherance of the policy outlined, a committee of five railway presidents was selected which came later on to be known as the Railroads' War Board, and this board continued to actively exercise the powers conferred upon it until the government itself actually took possession and assumed control of the properties.

Please bear in mind that this unprecedented action of the railroad presidents was taken within five days after our country entered the war with Germany, and from that time on, regardless of ownership, the railroad facilities of this country were treated as if they were all in fact a part of one national transportation system. Much was accomplished of unusual value, in the early days of the war, which received little recognition or appreciation on the part of the public generally. We were living at that time under new and trying conditions and the happenings of one day were quickly forgotten because of what was almost certain to take place the day after. The results accomplished by the Railroads' War Board were many and important. Perhaps the greatest single transportation achievement before, during or since the war was the assembling of the material necessary for the construction of the 32 large cantonments which were erected by the government in the late summer of 1917 for the housing of the army then being mobilized. Records kept by the Car Service Commission in Washington show that approximately 141,000 car loads of building material and supplies were moved to the particular location where required in connection with this immense construction program of the government, and all within a period of approximately eight weeks, and the secretary of war himself is the author of the statement that the government's building program was not delayed in the slightest because of lack of transportation. I repeat that the movement of this material from hundreds of different and out of the way places over branch lines, side lines and main lines to the points where needed, and within the time mentioned, while at the same time the railroads were handling a heavier tonnage of other commodities than ever before, was the greatest transportation achievement ever accomplished in this country under any circumstances, and it was done by the voluntary co-operation of the independent companies without guarantee or assurance by the government that they would ever be reimbursed (and as a matter of fact they were not reimbursed) for any losses or expenses resulting from the arrangement.

There were many difficult transportation problems to be dealt with during the period of the war, resulting from the unprecedented industrial activities caused by the war. Existing factories and shops were enlarged, new manufacturing

*From an address delivered before the Associated Industries of Massachusetts, at Boston, October 28, 1920.

plants of unheard of proportions were built, and the entire character of our industrial output was changed both as to quantity and direction of movement, and under all the circumstances I think the President acted wisely in taking over the control and operation of the railroads when he did. There were many questions involved besides the mere matter of transportation which made such action desirable. It was necessary, for instance, and as a war measure, to divert from some of the companies the business which naturally flowed over their rails in order that all the facilities of such companies might be used for the movement of other freight of a different character. This could not be done under the system of private ownership then in existence with all the restrictions under which the railroads were operating at that time. Under the Esch-Cummins Act, however, it is provided that when it is necessary to divert or reroute business because of emergencies of any character, the Interstate Commerce Commission shall have authority to order such diversions and to make such adjustment between the carriers on that account as may be fair and equitable, in case the carriers should be unable to agree between themselves. We had no law such as that previous to federal control; in fact, there were at that time laws on the statute books which definitely forbade many of the things now permitted or required. We have learned and profited by our experience.

The War Board, created by the railroads in 1917, established a Car Service Commission in the city of Washington, and this same commission or agency was continued by the director general during the entire period of federal control and is still in existence.

In harmony with the spirit of the Transportation Act, the railroads have recently created an Advisory Committee of eleven railway presidents geographically selected. This Advisory Committee supervises and directs the work of the Car Service Commission in Washington, and through that agency attempts to bring about such unification and co-operation between the carriers as may be necessary in the interests of the public. The law provides that the Interstate Commerce Commission, in the exercise of its newly imposed duties concerning matters of operation, may have use of such agencies as it may select, and it has seen fit to make use in large measure of the Car Service Commission of the railroads, just referred to. The Advisory Committee and the Interstate Commerce Commission have worked closely together in this matter, and I may say in full and complete understanding.

I wish to repeat that, under the terms of the Esch-Cummins Act, unified control or direction of the railroads can be quite as effective with private ownership and operation as it can be under government control and operation.

2. Congress, having determined after an exhaustive inquiry and a full consideration of the results obtained from federal control and operation for a period of 26 months, that it was in the best interests of this country as a whole to continue for a further period the policy of private ownership and operation, took definite steps to make that policy possible, and it wrote into the act a definite rule for the guidance of its agent, the Interstate Commerce Commission, for fixing the rates and charges of the carriers.

There can be no doubt that it was the intent of Congress, when it provided this definite rule for rate making, to make private ownership of the railways possible, because private ownership is not possible and cannot endure unless the railways are permitted to earn a return upon their properties sufficient to make investment in their securities attractive.

It is, I think, generally understood that a very large sum of money is required each year—certainly under existing conditions and with present prices not less than $1,000,000,000 in amount—for additions and extensions and new equipment in order that the railway system as a whole may be kept adequate to move the constantly growing commerce of our great country. It is, of course, possible that the provisions of the act in this connection may be inadequate. It is possible that Congress erred in its judgment and consequently in its instructions to its agent, the Interstate Commerce Commission, concerning the fixing of rates; that, however, can only be determined by actual test. If it should appear that rates fixed in accordance with the rules prescribed yield more than is fair and necessary, it is the duty of the commission to make appropriate reductions. If, on the other hand, the rates so fixed fail to yield enough to make investment in railway securities attractive, then in that event it will be necessary either to amend the law so as to permit higher rates and charges or accept the only alternative which, so far as I am now able to see, would be ownership and operation by the government.

Personally I do not think the alternative is desirable, nor do I think it will be necessary.

3. The third outstanding feature of the act is the provision which is made to assure just and reasonable wages and working conditions at all times and under all circumstances to the railway workers. Strangely enough this provision of the act seems to be opposed by some who speak for labor when I would suppose it would find in the ranks of labor its strongest supporters.

Section 301 of the act says that

> "It shall be the duty of all carriers and their officers, employees and agents to exert every reasonable effort and adopt every available means to avoid any interruption to the operation of any carrier growing out of any dispute between the carrier and the employees or subordinate officials thereof. All such disputes shall be considered, and, if possible, decided in conference between representatives designated and authorized so to confer by the carriers, or by the employees or subordinate officials thereof, directly interested in the dispute. If any dispute is not decided in such conference, it shall be referred by the parties thereto to the board which under the provisions of this title is authorized to hear and decide such dispute."

Section 304 provides for the creation of the board above referred to and reads as follows: "There is hereby established a board to be known as the Railroad Labor Board and to be composed of nine members. * * *"

The members of the board are to be appointed by the President, but three of his appointees shall be from men nominated by the railway employees, three shall be from men nominated by the railway companies, and three shall be selected by the President himself as representing in a larger way the general public, but all nine shall be confirmed by the Senate. In fact, Congress has created for this particular purpose a special labor court consisting of the same number as the Supreme Court of the United States, appointed in the same way, that is to say, by the President and approved by the Senate, and has given the board or court a status and dignity in keeping with its importance. The law also says that it shall be the duty of the board to establish rates of pay and standards of working conditions which in the opinion of the board are just and reasonable, and in determining the justness and reasonableness of such rates the board shall take into consideration among other things:

(1) The scales of wages paid for similar kinds of work in other industries;
(2) The relation between wages and the cost of living;
(3) The hazards of the employment;
(4) The training and skill required;
(5) The degree of responsibility;
(6) The character and regularity of the employment; and
(7) Inequalities of increases in wages or of treatment, the result of previous wage orders or adjustments.

It may fairly be said that Congress by this act has made a preferred class of the railway workers, because so far as I know this is the first time that Congress has ever said that any particular class of the people should be given at all times and under all circumstances just and reasonable wages and just and reasonable working conditions. Of course it may

be said that Congress did not do this primarily in the interest of the workers, nor would Congress have been justified in doing so. Congress acted only as it had a right to act, in the interests of the nation as a whole. Congress acted with a full realization of the importance of an uninterrupted transportation system in a country such as ours, but being unwilling to deprive the workers of their right to strike (and nothing in this bill does deprive the workers of their ultimate right to strike), it sought to provide machinery which would make it unnecessary under any circumstances for the men to stop work in order to obtain just and reasonable treatment. In short, Congress provided by law so that the railway workers would at all times be assured of just as good wages and just as good working conditions without striking as they could reasonably expect to secure if they did strike, for it is clear that no one could justify a strike for wages or working conditions that would be unjust or unreasonable.

It may also be that in some respects this portion of the law is incomplete and inadequate, and time may develop that changes are necessary. If so, they will undoubtedly be made. In the meantime it is certainly in the interest of all that the law, or specifically this particular feature of the law, should be given a fair and just trial, and I firmly believe that as the law comes to be better understood by the railway workers as a whole they will realize that they have indeed been made a preferred class, in which event I venture to predict that we will be free from railway strikes in the future; not, however, because the men have been forbidden to strike, for I repeat there is nothing in the law which limits the right of the railway workers to strike if they want to do so, but simply because the law provides a way by which they can obtain without striking everything that they could reasonably expect to obtain even if they did strike.

While the act has been in effect but a short time, we have nevertheless had opportunity to see how it worked in one specific case. In the only award so far announced by the Labor Board it was stated that the effect of the higher wages then allowed would mean an aggregate increase in wages to all of the railway workers of approximately $600,000,000 per year.

If this provision of the act will indeed secure to the railway workers just and reasonable wages and working conditions, and I believe it will, and if on that account it actually does operate to prevent strikes upon the railways in the future—and I believe it will—then this particular section of the law does indeed rank as a great and worthy piece of legislation.

During the years immediately preceding federal control there were many who seriously doubted if private ownership and operation could continue as an economic policy in this country under the laws and conditions as they then existed. I shared that opinion at that time. I feel now, however, that Congress by virtue of the Transportation Act of 1920 has not only made private ownership and operation possible as an economic policy, but it has also provided so that there can and should be the fullest measure of unified direction and control whenever or wherever necessary in the interests of the people.

Further, it has provided by definite enactment so that there need be no fear in the future of interruption of service because of disputes between the railways and their employees concerning wages or working conditions. Although Congress by its action has made the continuation of private ownership possible, whether private ownership actually will continue or not, having been made possible, will depend upon whether the people as a whole continue to want it—and this will depend upon whether they are satisfied with the service which they receive from the railroads as a whole under the existing policy. In short, as I view the matter, whether private ownership continues to be the economic policy of this country depends very largely upon the railway managers themselves. If they are men of vision and if they realize their responsibilities as semi-public servants, as well as trustees of properties of great value owned alike by large and small investors, as I believe they do, if they feel that the policy of private ownership of property, which has been the fundamental economic policy in this country since its very inception, is upon the whole the best policy and should be continued, and if as good citizens they are willing, and not only willing but anxious to do all they can to make that policy enduring, as I believe they are, then I also believe they will succeed in their undertaking.

It must be borne in mind, however, that during the period of the war, while nearly all other industrial and productive activities were greatly enlarged, very little relatively was done to increase the capacity of the carriers, because they were in fact able to render the service required of them with the facilities they already had. The result is that to-day the railways of the country as a whole, due in part to the severe strain under which they were operated during the war, are under-equipped with motive power, cars and other facilities, and as a whole are not now in as good physical condition as they were at the beginning of federal control. The cars and engines purchased by the government during a period of 26 months were actually less in number than the railroad companies had been in the habit of buying during each period of 12 months. In short, at the present time and for the reasons mentioned, the railways are not adequately equipped to handle promptly all of the business offered. Even so, it is not possible immediately to increase railway facilities because if the money for so doing were available, time also is an element in such matters.

The railway managers, however, are making determined effort to improve the efficiency of the existing facilities, and to that end they have set up certain standards of operation which they hope to accomplish. They have undertaken as a whole to obtain an average movement of not less than 30 miles per freight car per day, to obtain an average loading of not less than 30 tons per car, and to reduce the cars in bad order and held out of service for repairs to not more than 4 per cent of the total number of cars owned. Not one of these standards has ever been accomplished before by the railroads as a whole, either under private ownership or under federal control and operation. If the railways should be able to achieve concurrently the three standards I have mentioned, it would in effect be equivalent to adding over 500,000 cars to those now available for service—an increase of approximately 25 per cent. I do not expect that the railroads will immediately reach the standards of operation they have set up for themselves, but when they are accomplished, as I firmly believe they will be, they will be simply stepping stones to still higher achievements.

While there is much that the public itself can do by way of co-operation, which will also tend to increase the efficiency of equipment, the railway managers are not depending upon the public to work out this problem for them. They consider it primarily as their own. I am glad to say, however, that upon the whole the public is co-operating in a most willing and helpful manner. Conditions on the railways as a whole have already much improved since the termination of federal control, and I feel confident that within the next six or eight months, perhaps much sooner, the carriers will be able once more to handle currently the business that is offered, and inspired by the possibilities of increased profits—that incentive which is wholly lacking in any system of governmental control but which is the inspiring motive behind all commercial and gainful effort—they will not only be in position to promptly accept the business you offer, but once more they will be seeking, by superior service, to obtain your enlarged patronage.

English Railway Statistics

By L. G. Lauck

THE RAILWAY GAZETTE of London has recently published some comparative traffic and operating statistics for eleven of the principal railways in England and Wales Owing to the fact that during 1919 the railways were still operating under the terms of their wartime arrangement with the government, detailed statements of revenues and expenses for the year 1919 are not available. However, the returns which throw the most light on the situation at the present time, as compared with 1913, are those relating to rolling stock, train and locomotive mileage, and passenger and freight traffic.

These eleven railways operate 39,535 miles of line or about 72.5 per cent of the total railway mileage of Great Britain.

The number of locomotives in 1919 were 19,273 as compared with 18,977 in 1913, an increase of 1.56 per cent. Several of the companies are introducing electric traction on their suburban lines and are replacing some steam locomotives with electric motor vehicles.

The number of passenger cars were somewhat depleted during the war. Comparing the number in the service in 1919 with the number shown for 1913, there is a decrease of 798 cars. As a result, the aggregate seating capacity was reduced, bringing about a reduction in accommodations for passengers amounting to 1.63 per cent. This decrease in passenger traffic capacity is a matter for serious consideration, for it makes no provision for the increased number of ordinary passengers amounting to 17.48 per cent, in addition to a large increase of 72.04 per cent in holders of workmen's tickets. The tremendous increase in the number of persons traveling on workmen's as well as season tickets was brought about partly by the greater increase in the price of ordinary tickets in 1917 than of the workmen's and season tickets, and partly by the housing difficulty, which has driven the urban population into outlying residence and suburban districts. The increased spending power of the English people is reflected in the increased number of passengers traveling first class.

ENGLISH RAILWAY STATISTICS, 1919 COMPARED WITH 1913 (a)

	1913	1919	Per cent increase or decrease, 1919 over 1913
Number of passengers carried (excluding season tickets)	700,848,998	823,357,555	17.48
First class	12,778,159	22,793,602	78.37
Second and third class	538,218,295	542,768,446	0.84
Workmen's tickets	149,848,544	257,795,507	72.04
Number of season tickets	421,042	649,293	54.20
First class	72,311	111,322	53.95
Second and third class	348,731	537,971	54.27
Aggregate seating capacity of passenger cars	2,049,104	2,016,179	d 1.63
Total freight carried.—tons	281,748,905	234,767,851	d 16.68
Freight cars	560,509	559,711	d 0.14
Passenger cars	58,277	55,962	d 3.97
Locomotives	18,977	*19,273	1.56
Locomotive-miles	465,063,391	391,778,696	d 15.76
Miles per locomotive	269,016	221,090	d 17.81
Freight train-miles	120,876,647	107,351,284	d 11.19
Passenger train-miles	197,588,305	143,900,223	d 27.17
Total train-miles	318,464,952	251,251,507	d 21.11

*Including 12 electric locomotives. (a) Comparisons are for 11 principal railways in England and Wales.

The number of freight cars in 1919 was 559,711 as compared with 560,509 in 1913, a slight decrease. While it has been impossible for the companies to increase the number of their freight cars, many are replacing old cars with those of greater carrying capacity. The figures for 1919, however, do not accurately represent the number of available freight cars, as some were in France in the government service at that time. This reduction in the available freight equipment was probably one of the factors that reduced the volume of tonnage moved by 16.68 per cent.

The number of locomotive-miles in 1919 was only 391,778,696 miles as compared with 465,063,391 miles in 1913, a decrease of 15.76 per cent, while there was a decrease of 21.10 per cent in the number of train-miles. Freight train-miles decreased at a relatively smaller rate than the freight tonnage handled, while passenger train-miles decreased 27.17 per cent along with a considerable increase in the amount of passenger travel. This leads to the inference that the freight train load decreased during the period, while the passenger train load greatly decreased. Inasmuch as the number of available passenger cars fell off during the period, it follows that the increase in number of passengers per train must have been accomplished through greater loading per passenger car, i. e., overcrowding.

National Transportation*

By Richard S. Hawes

President, American Bankers Association

ALTHOUGH the transportation problem belongs to an activity not directly under the control of the bankers, it is, nevertheless, germane to banking, since the tension of credit to a large extent was brought about by the breaking down of the transportation system, hampering the turnover of commodities and retarding the liquidation of loans.

One of the most important pieces of legislation passed in the Sixty-sixth Congress was the Transportation Act of 1920, stabilizing railroad credit and securities issued. Beneficial effect will also be felt in the general credit structure of the country. Investors should be able to reasonably count on what return can be expected from the railroad securities which they own. Several months will be required for adjustment in the relation of rates to the required return, because the Interstate Commerce Commission has tentatively valued railroad properties in groups, as required by the act. It would have been impossible to increase railroad wages, nor could the commission have made a substantial increase in rates, under the old method of operating.

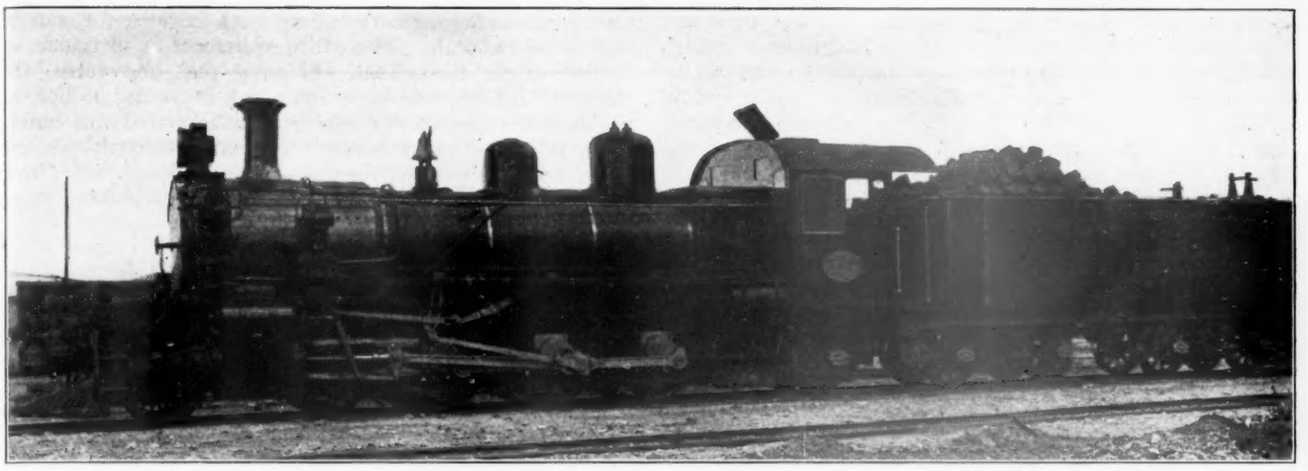
Rate-making should be considered an automatic procedure in so far as it concerns the distribution of rates on commodities, or on the different classifications of traffic. Up to the passage of the Transportation Act, railroad executives hardly recognize the need of government regulation, and continued to operate along the lines of opposing what has since become necessary regulation.

The passage of the Transportation Act has taken railroad securities out of the highly speculative class, and stabilized conditions so that just returns on investment may be received, and proper service rendered to the nation.

The establishment of the revolving fund of three hundred million dollars was provided to meet the present equipment emergency, and from that has been evolved the National Service Corporation, which will enable the carriers to purchase equipment under a debenture plan that will make an attractive investment to the public.

The bankers of America should study the Transportation Act and its effect on securities and the general welfare. The financial institutions should co-operate with the Interstate Commerce Commission in its efforts to solve the problems of railroads. Naturally, more co-operation can be given when it is ascertained what effect the Transportation Act will have on railroad earnings, operating under these mandatory features. An amendment to the present law should be encouraged so that bankers or other business men, regardless of their dealings with railroads, can serve as directors, but charging them with full responsibility in their duties.

*From President's address at the forty-sixth annual convention of the American Bankers' Association, at Washington, D. C., in October, 1920.



There Are Four of These German Pacifics on the Antofagasta & Bolivia

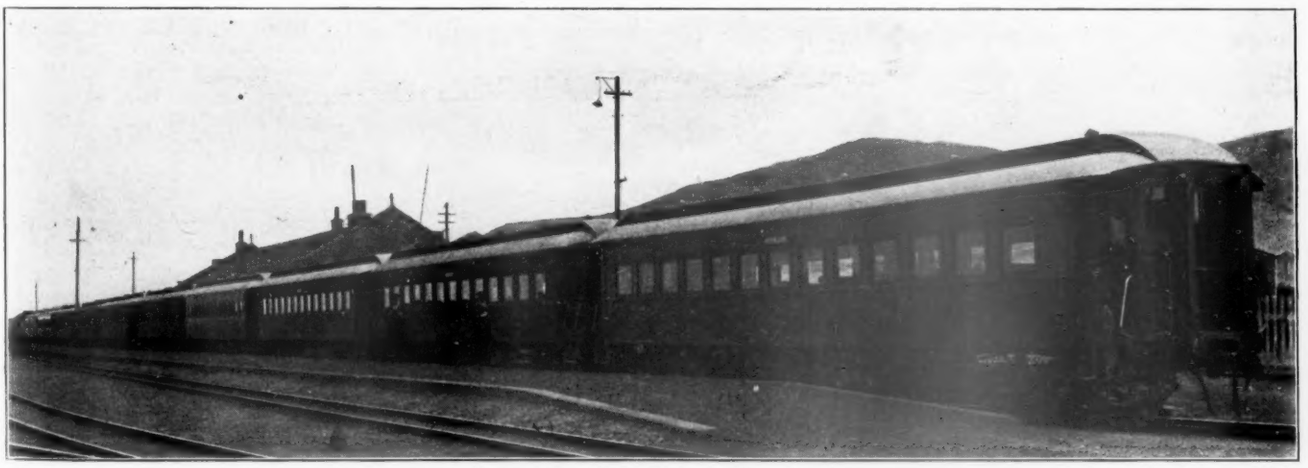
Meter Gage Railways the Standard in Bolivia

This is the Seventh of the Series of Articles by the Railway Age's South American Correspondent

By John P. Risque

IN MY LAST ARTICLE I undertook the description of the three railway lines of Bolivia. The present article continues the comment concerning the third of these lines, the Antofagasta & Bolivia, and explains some of the projects for future expansion of the country's railways.

As far as the tourist is concerned, the one most awe-inspiring sight on the interesting line of the Antofagasta & Bolivia is the active volcano of Ollague which stands 20,000 ft. high in the back yard of the railway station of that name —and smokes continuously. At this point there runs a 58 mile branch to the Collahausi copper mines, said to be among the richest in the world. At Cebollar, a little further down, lies a borax lake, 24 miles in length, which is owned and operated by the Borax Consolidated Company, an American institution. The next station, Ascotan, marks the summit of the line, 13,000 ft. above sea level. At San Pedro station, 313 miles from Antofagasta, is located an interesting water-works development constructed by the Antofagasta & Bolivia Railway at a cost in excess of $6,000,000. Reservoirs were blasted out of solid rock and 11 in. pipes carry pure mountain water over 195 miles to Antofagasta and the surrounding nitrate fields. The celebrated Loa viaduct, just north of Conchi station, 185 miles from Antofagasta, is no longer used by the railway company, a detour having been built around it, but during "its day" passengers were known to have sat up all night for a view of this notable engineering structure 336 ft. above the Loa river. Nearing Antofagasta, near mile 152, is a 6 mile branch which runs to the famous Chuquicamata copper mines of the Chile Exploration Company. "Chookie," as this enormous camp is called by ex-employees in the district, is producing upwards of 600 tons of copper a day.

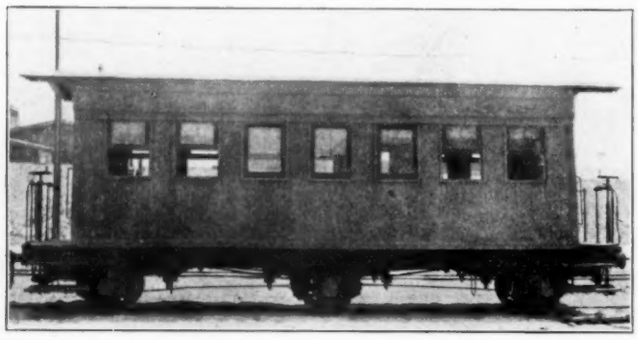


"El Internacional," All Sleeping Car Train of the Antofagasta & Bolivia

In spite of the English characteristics from one end to the other of this very narrow but none the less interesting railway, a former disposition to patronize the American market is evidenced by the appearance of automatic couplers almost

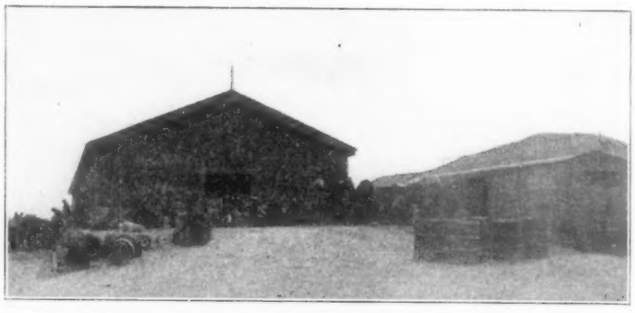
throughout, Westinghouse air brakes on the passenger trains and a sprinkling of old Baldwin Moguls with outside driving boxes scattered here and there among German Pacific type passenger locomotives and Consolidations. What would appear to an American as rather a curious interpretation of the Mallet type, is an assortment of single expansion "double enders," the product of a British designer. These engines can be described as 0-6-2-6-2 types with both sets of running gear headed towards the rear. An extension of the main frame supports the coal bin built on the rear of the cab under which the leading engine is mounted. The whole affair runs backwards, pulling the water tender from the smokebox end. The steaming qualities of these queer engines are said to be greatly exceeded by the superior abilities of "old Ollague," the steadily smoking volcano referred to previously.

Cars, like most of those in use in South America, are patterned after American designs, but berths in the "dormitorios," as the sleeping cars are called, invariably follow the Briton's preference for lying crosswise of the car, and are arranged in private compartments. The use of oil for fuel is on the program of this road and locomotives thus equipped are now being run from Antofagasta as far as Ollague. In this connection, it is pertinent to point out that, with few exceptions—notably the Chilean Central lines where coal is available from Chilean mines and relatively cheap—nearly all railways in South America have, where they conveniently can, undertaken the installation of oil burners in their locomotives.



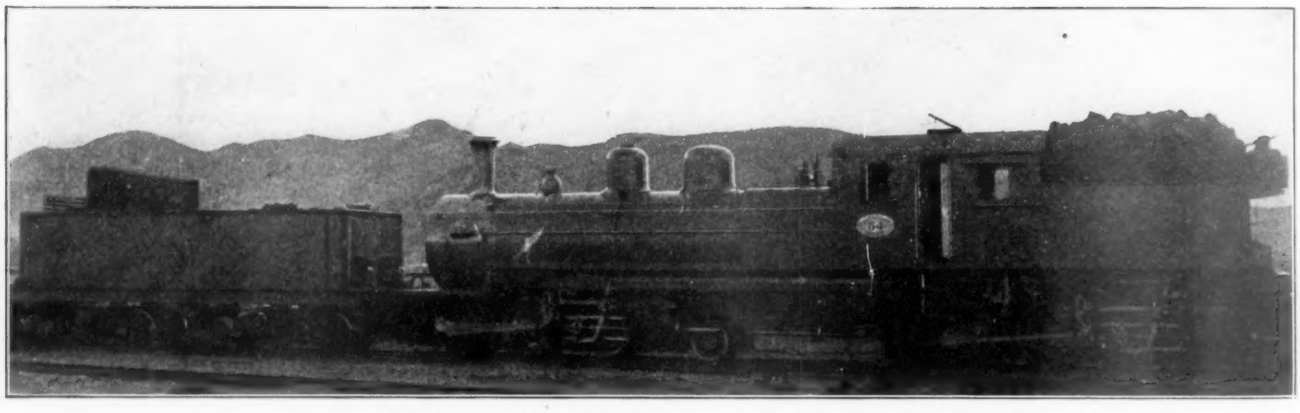
Car at the Mejillones Shops of the Antofagasta & Bolivia Used to Carry Employees to Work

At Mejillones, a small town on the coast 43 miles—about two hours' run—north of Antofagasta, the general repair shops of the Chilean end of the line are located. The layout at this point is a study in complete arrangements. The provisions, in contrast to the somewhat limited facilities at Oruro, where the northern rolling stock is cared for, can be said to be elaborate. The entire equipment is, of course, of British origin throughout. Entering the shop yards, the stranger will be somewhat interested in seeing a line of saddle horses tied up at the gate of the administration building. When he has tramped a few miles through the soft dry sand which covers the town and the shop yards from one end to the other, however, he too may wish for a horse when he sees the "old man" and his aides emerge from the offices and ride away to lunch.



Freight House Scene on the Antofagasta & Bolivia

The most notable enterprise on Bolivia's construction program is the building of the meter gage La Paz-Yungas Railway, the capital for which was furnished by Chandler & Co. and the Equitable Trust Company of New York. The so-called Chandler loan to Bolivia is said to have been the only long-term issue of bonds of a foreign government placed in the United States during the war, and provides in its contract that all of the construction machinery and equipment as well as future rolling stock is to be purchased in the United States. The actual completion and operation of the line at this date has reached 14 miles. By next March, it is expected that the rails will have reached Pongo, 14 miles further. The Peruvians plan to make their proposed Paita to the Marañon river line (referred to in a previous article) an eventual transcontinental route. The ambition of the Bolivians is to make the La Paz-Yungas road of similar importance to their country. Coripata, in the center of the Yungas valley, is the present objective. After this point is reached the government intends to extend the road to a point on the Beni river, due north of Coripata. The Beni river reaches the Brazilian border, via the river Madre de Dios, at a point some distance below the terminal of the Madeira-Marmore Railway of Brazil which carries products from the interior to the Madeira river and thence to the Amazon and the Atlantic ocean.



There Are Six Locomotives of This Type on the Antofagasta & Bolivia

The Bolivian government's scheme is considered by some

to be extremely ambitious, but the apparent determination of the builders seems to be founded on something more than a desire merely to get to the other side. The Yungas region, in the vast northeast hinterland on the Atlantic slope of the Andes range just beyond La Paz, has long been that city's source of coffee, cocoa, lumber, fruits and other products which have hitherto found their way to the markets of La Paz on the backs of burros and llamas of which there is said to be a stream of several thousand a week in both directions. Uyuni, where the Antofagasta & Bolivia's gage changes, was said by a passenger to look like "the jumping off place." Uyuni, however, is destined by at least two of the influential republics on that coast to become eventually something more than that, and when the financing is rearranged in such a manner as to facilitate the completion of the gap of approximately 200 kilometers between Atocha and La Quiaca, via Tupiza, that same Uyuni will commence to figure as a jumping off place of extreme importance in the itinerary of Peruvians, Bolivians and all others seeking a short and relatively comfortable route to Buenos Aires. The contract for the completion of this link has recently been awarded. The transcontinental line through Argentina, Bolivia and Peru will before long become a reality and Peru and Bolivia may deprive the Chileans of much transcontinental trade.

The branch line from Rio Mulato on the Antofagasta & Bolivia north from Uyuni to Potosi is in operation 30 miles beyond the latter town in the direction of Sucre and construction has been completed to a point called Betanzos, about half way. The extension of this line beyond Sucre to the town of Lagunillas which lies in the path of the abandoned project of a north and south line from Puerto Rojas to Yacuiba on the Argentine frontier, is said to be a bare possibility. It is believed by those in authority that Santa Cruz, also in the path of the Puerto Rojas-Yacuiba project, will be connected by a railway with Corumba on the Brazilian border at latitude 19; the latter point is the western terminus of the Great Western Railway of Brazil. Similar authorities are responsible for the prediction that the Braden copper interests will shortly exercise their concession to build a line from Sucre to Yacuiba as well as a line from Santa Cruz, running in a southeasterly direction to a point on the Sucre-Yacuiba road, half way between the two terminals. This combination is said to be viewed with favor by those who were interested in seeing the Puerto Rojas-Yacuiba line put through, as it will provide an outlet for the Santa Cruz district, and while not quite as direct, will serve the purpose. Argentina is said to have authorized the construction of 87 miles of line from Yacuiba south to Embarcacion, the northern terminal of the Argentine government lines.

The "Best Friend of Charleston"

THE LAST MONTH marked the ninetieth anniversary of the landing of this historic locomotive in Charleston S. C., the ship Niagara, bearing the engine from New York, having reached Charleston on October 23, 1830. The Southern Railway Company, in which system the pioneer railroad is now included, commemorates the event by a brief notice in its News Bulletin for September.

The "Best Friend" weighed about four or five tons; or, say, from one-fortieth to one-thirtieth the weight of a Southern Railway express locomotive of today.

The engine was built at the West Point foundry, New York, and the design is credited to Horatio Allen, who ran the Stourbridge Lion, the first locomotive that was ever moved on a track in America. Allen was chief engineer of the South Carolina Canal & Railroad Company. This railroad, extending from Charleston westward to Hamburg, S. C., opposite Augusta, Ga., was the first continuous 10 miles of railway in the world; the second railroad in the United States; the first to run a steam locomotive built in the United States for regular service, and the first in America built with the intention of using steam as motive power.

Continuing, the News Bulletin says:

"In 1827 Alexander Black, of Charleston, and his associates, petitioned the South Carolina legislature for a charter to organize a railroad company. The charter was authorized and the South Carolina Canal & Railroad Company was organized at the Charleston City Hall on May 12, 1828. One year, ten months and twenty-one days later the road was opened as far as Branchville, 62 miles, to Hamburg, about 136 miles, on October 1, 1833.

The "Best Friend of Charleston" had, according to the best accounts available, a boiler hardly larger than a flour barrel and cylinders 6 in. in diameter. Its four wheels were each 4 ft. 6 in. in diameter. The track was of strap rail, laid on wooden stringers.

"The board of directors of the South Carolina Canal & Railroad Company, having rejected the idea of employing horses for motive power, upon the advice of Mr. Allen, and also having abandoned the suggestion of operating trains by sails, gave orders for two locomotives, the second one being the "South Carolina."*

The "Best Friend" made its first excursion trip with passengers on January 15, 1831, the anniversary of the commencement of the road. The first test of this locomotive has been described by David Matthew, foreman at the West Point Foundry. He says:

"On the 14th and 15th of December, 1830, the engine was tried and proved her force and efficiency to be double that contracted for; running at the rate of 16 to 21 miles an hour with 40 or 50 passengers in some four or five cars; and without the cars 30 to 35 miles an hour."

The Charleston Courier of January 17, 1831, tells the story of the first excursion trip:

"On Saturday last 150 stockholders assembled at the company's building in Line Street, together with a number of invited guests. . . . The first trip was performed with two pleasure cars attached, upon which was a detachment of United States troops and a field piece which had been politely granted by Major Bolton for the occasion."

Six months later the "Best Friend," in charge of an ignorant wood passer, exploded and the boiler was wrecked. Subsequently the locomotive was rebuilt and came out of the shops under the name "Phoenix." It was operated for several years in the service of the road under its new name. Following the explosion the patrons of the road became alarmed, and to allay their skepticism the directors caused a flat-car loaded with bales of cotton to be interposed between the engine and the passenger coaches.

A lady describing her first ride, wrote:

"We not only had no accident but no tendency to one in our 135-mile flight between sunrise and sunset; and it was like magic to be seated with a circle of friends at Augusta, sipping a quiet cup of tea at twilight."

The road enjoyed high favor with the public and in 1838 was authorized by an act of the South Carolina legislature to increase its passenger rates to 7½ cents a mile.

THE RAILROAD COMMISSION of California granted applications to provide funds for additions and betterments and for refunding, collateral, reorganization and miscellaneous purposes, to the amount of $324,666,014.89 to steam railroads during the fiscal year ending June 30, 1920. There are 50 steam railroads, operative; 9 steam railroads, lessor; and 3 steam railroads under construction in the state.

*The South Carolina, described by M. N. Forney in "The American Railway" (1889), had eight wheels and a flexible wheel base.

St. Louis Railway Exposition

A UNIQUE and most successful exhibition of railway appliances was held at St. Louis, Mo., October 25-30. It was developed by a group of railroad officers, representatives of employees, railway supply men and influential citizens of St. Louis to promote educational work along technical lines among railroad employees, and also to develop a spirit of fellowship and comradeship through the several programs.

Two important factors in arranging for the exposition were the St. Louis Railway Club and the Railroad Y. M. C. A. The latter organization loaned its buildings for the use of the exposition, a considerable portion of the first and second floors of the main building being used for the display of the exhibits. The Y. M. C. A. hut, which is on the same plot of ground as the main building and which was used to such excellent advantage for the entertainment of soldiers during the war, was used for the special meetings and for the social activities. It was intended to devote the remainder of the large plot of ground to various concessions under canvas which would lend a sort of carnival effect to the exposition as a whole. This part of the program, however, was interfered with by bad weather. The approach to the grounds was brilliantly illuminated during the evenings and an electrically lighted fountain, which flashed the railroad colors, added to the artistic effect as a whole. The lighting arrangement for the fountain was devised by one of the railroad men in the employ of the Terminal Railroad Association.

There were 35 exhibitors. The attendance averaged better than 1,000 railroad employees a day and the exhibitors are enthusiastic over the interest which was shown. The exhibit was intended purely for educational purposes among the railroad employees, with the thought that if the men thoroughly understood the devices and materials with which they work they could function more effectively.

Every day from noon until 1.00 a. m. of the following morning there was a more or less continuous program, including scientific talks, technical lectures, educational motion pictures, addresses and special demonstrations of apparatus. Special vaudeville programs were presented each evening by different groups of employees. For instance, the Monday evening program was given by employees of the Wabash Railroad; Tuesday was known as Frisco Day; Wednesday, Katy-Pennsy Day; Thursday, Missouri Pacific Day; Friday, Cotton Belt Day, and Saturday, Terminal and American Railway Express Day.

The program at the opening of the exposition included an address by Mayor Henry W. Kiel of St. Louis, and an address by B. C. Winston, assistant attorney and general claim agent of the Wabash Railroad. Other addresses of special note during the week were made by Vice-President A. Hilton of the Frisco; James L. Dalton, president of the Dalton Adding Machine Company; H. J. Bell, secretary, National Safety Council; Thomas O'Donnell, Bureau of Explosives; H. C. Woodbridge, Locomotive Stoker Company; Edwin G. Merriam, general solicitor, Missouri Pacific; L. S. Werthmuller, chairman, St. Louis Sectional Committee, Signal Division, American Railway Association; Col. F. W. Green, vice-president, Cotton Belt Railroad; Clarence H. Howard, president, Commonwealth Steel Company, and Roy V. Wright, managing editor, *Railway Age*.

The large attendance of ladies, including those in railroad service as well as members of the families of railroad employees, was a feature of the special programs in the evening. There was a family spirit about the whole affair which added much to its effectiveness. Special inspirational programs were held by the Railroad Y. M. C. A. on the Sunday afternoons preceding and following the exposition.

About 200 men were included on the committees which had charge of the various activities. The officers of the exposition were: President, I. L. Burlingame, formerly of the Terminal Railroad Association of St. Louis; vice-president, W. C. Doering, Southern Wheel Company; treasurer, F. P. Johnson; general auditor, Missouri Pacific, and secretary, Dr. Rubens Humphrey, general secretary, Railroad Y. M. C. A.

The principal committees with their chairmen were as follows: Exhibition committee, W. C. Doering, Southern Wheel Company; program committee, Dr. Rubens Humphrey, Railroad Y. M. C. A.; entertainment committee, Harry R. McClain; music committee, C. E. Lindquist, locomotive engineer, Terminal Railroad Association; speakers' committee, W. E. Williams, assistant chief operating officer, Missouri, Kansas & Texas; reception committee, T. K. Knight, chief clerk to the general superintendent, Chicago, Burlington & Quincy; finance committee, F. P. Johnson, general auditor, Missouri Pacific; decorating and lighting committee, H. J. Pfeifer, chief engineer, Terminal Railroad Association; publicity committee, B. W. Frauenthal, general passenger and ticket agent, Terminal Railroad Association, and secretary of the St. Louis Railway Club.

The expenses of the exposition were defrayed by a small assessment against the exhibitors on the basis of the square feet of space accupied. Unfortunately the total amount of space was limited and it was not possible to accommodate more than one-half or one-third of the applicants. It has already been practically decided to hold a similar exposition next year, but special arrangements will have to be made to provide larger space for exhibits. The exhibitors and the material displayed included the following:

The Rail Joint Company, rail joints.
Pyrene Manufacturing Company, fire apparatus and extinguisher.
Edna Brass Manufacturing Company, injectors and locomotive appliances.
National Malleable Castings Company, couplers, draft gears and other car specialties.
Southern Hardware and Supply Company, miscellaneous railway supplies and specialties.
The P. & M. Company, rail anchors.
Handlan-Buck Manufacturing Company, miscellaneous railway supplies and specialties.
Certes Supply Company, miscellaneous railway supplies and specialties.
Dalton Adding Machine Company, adding machines.
Monroe Calculating Machine Company, calculating machines.
Sellers Manufacturing Company, tie plates.
Martin Tool Holder and Machine Company, tool holders and machine shop specialties.
The Shaw-Walker Company, office equipment and devices.
Vapor Car Heating Company, car heating equipment.
Scullin Steel Company, freight and passenger car specialties.
Westinghouse Air Brake Company, air brake equipment.
American Brake Shoe and Foundry Company, brake shoes.
Dictaphone Company, office equipment.
Western Railway Equipment Company, miscellaneous railway supplies and specialties.
American Brake Company, air brake equipment.
Con. P. Curran Printing Company, printing and advertising.
Chicago Pneumatic Tool Company, pneumatic tools.
Galena Signal Oil Company, signal and lubricating oils.
Laclede Steel Company, axles, forgings and reinforcing materials.
Gustin Bacon Manufacturing Company, miscellaneous railway supplies and specialties.
Commonwealth Steel Company, freight and passenger car specialties.
Bird-Archer Company, boiler chemicals.
Fairbanks, Morse & Company, motor cars and other specialties.
Bradford Draft Gear Company, draft gears.
Corby Supply Company, miscellaneous railway supplies and specialties.
Elliot Frog & Switch Company, frogs and switches.
Southern Wheel Company, chilled iron car wheels.
Locomotive Stoker Company, locomotive specialties.
National Safety Council, safety appliances.
St. Louis Frog & Switch Co., frogs and switches.

THE BOND MARKET gives assurance that investors are inclined to put their money into transportation enterprises, and during the next five years we may expect great activity in all departments of transportation. Ideal facilities, however, cannot be provided at once; development has been stopped so long that the improvements needed cannot be made in a few months; enlargement of terminal yards and the purchase of equipment costing millions if not billions require considerable time. Besides it is no small undertaking to restore the discipline which deteriorated lamentably under the blight of federal operation, and it may fairly be said that morale is as essential as improvements in the physical property. But a beginning has been made, and if the managers prove that the public can depend upon them for better service than was given by the government, abundant capital will be placed at the disposal of the carriers.—*Providence Journal.*

Railway Electrical Engineers' Annual Convention

Organization Will Probably Soon Become a Part of the American Railway Association

THE TWELFTH ANNUAL CONVENTION of the Association of Railway Electrical Engineers was held in the Auditorium Hotel, Chicago, October 19 to 22, inclusive. The first session, held on Tuesday, October 19, included the address of the president, the report of the secretary-treasurer, the report of the auditing committee, the discussion of new and unfinished business and the report of the committee on illumination. In regard to the question of affiliation with the American Railway Association, President Billau said that the executive committee of the A. R. A. has taken the matter up for consideration and will take action as soon as all necessary arrangements have been made.

The report of the committee on illumination dealt with changes in methods of rating train lighting lamps, changes in rating of locomotive cab lamps, baggage car and coach illumination tests and standard lamp positions for coach lighting units. In the discussion the advantages to be gained by the gas filled lamps were emphasized. It was said that this type of lamp is more efficient than the round bulb lamp, that it will not blacken and that because of the concentrated filament a better light distribution is possible. The position of the lamp in the reflector is important, as a difference of from one-half to three-quarters of an inch in position may reduce the illumination by 50 per cent.

Electric Welding

On Wednesday reports were presented on electric welding, electric headlights and railroad stationary power plants. The work that is being done to develop the art of electric welding was outlined by the welding committee and recommendations were made regarding both experimental and everyday work. The report contained three rules which must be observed if the weld is to be a good one. These rules are (1) proper material for making the weld; (2) rules and methods for properly using these materials; (3) intelligent application of the process to the various mechanical devices or articles that are to be welded. After presenting the report, E. Wanamaker, electrical engineer, Rock Island, enlarged on the subject in substance as follows: Electric welding is the best form of autogenous welding for controlling the character of the metal applied to the weld. It is not a one-man job and needs the best experience of the metallurgist and the mechanical and electrical men. Much trouble has been incurred in the past because the purchase of equipment has been delegated to some one person. Not enough of the departments affected have been consulted. There must, however, be a leader; someone who will be responsible for the work done. A certain few condemn this process of welding because they have not had success and do not attempt to understand why others are able to get 100 per cent good welds.

H. C. Meloy, supervisor electrical equipment (N. Y. C.), asked if electric welding equipment could be used successfully for cutting out rivets in wrecked steel cars, and Mr. Wanamaker replied by saying that it could be done successfully with a large machine or with two machines connected in multiple.

L. S. Billau, assistant electrical engineer (B. & O.), questioned the economy of cutting rivets electrically. Mr. Wanamaker said that it might be done economically where the work in one place is sufficient to warrant the use of a large machine and said further that he was looking for a machine which might be used for both cutting and welding. He added that there was also a need for weather-proof units for out-door service, including some driven by gasolene engines.

Locomotive Headlights

The report of the committee on locomotive headlights was presented by E. W. Jansen, electrical engineer, Illinois Central. The report included tests made on locomotive headlights for yard service and dealt with signal lamps on locomotives and bolt and screw threads for electric headlight equipment. The committee recommended that on locomotives having pressed steel front ends the headlight should not be mounted on the front of the smokebox door, on account of the vibration caused by the pulsating action of the locomotive exhaust, and also on account of the difficulty of the towerman seeing the locomotive number in the headlight case where such locomotives operate in multiple service. It was recommended that the headlight be mounted as high as practicable on the front and above the smokebox door. The need for an improvement of the signal lamp supporting socket or bracket was expressed, and recommendations were made for appointing a joint sub-committee made up of the A. R. E. E. and A. R. A. headlight committees to develop a design, or designs, for standard headlight cases.

Adding to the report, Mr. Jansen said that if test results are to be of value, the tests should be made on the right-of-way. He also said that the test results indicated that smaller headlight lamps might be used.

J. L. Minick, assistant engineer, motive power department, Pennsylvania, agreed wtih Mr. Jansen that smaller lamps might be used, but pointed out that the lamps used must be large enough to allow for depreciation of silvered copper reflectors.

The relative merits of sheet and cast metal headlight cases and of silvered copper and glass reflectors were discussed at considerable length.

Railroad Power Plants

The report of the committee on stationary power plants was presented by L. C. Bowes, supervisor stationary power plant (C. R. I. & P.). The report included a capacity and distribution chart for making railroad power plant layout and dealt with minor requirements, power and air capacities for engine terminals, values for estimating steam consumption, distribution of heating charges and the modernization of stationary power plants to better adapt them to existing conditions.

J. R. Sloan, chief electrician, Central Region, Pennsylvania, spoke of the need for adequate pipe covering and suggested the use of colors for different kinds of pipe with arrows to show the direction of flow. J. E. Gardner, electrical engineer (C. B. & Q.), enlarged on the subject of pipe covering and suggested the use of small electrically driven air compressors for avoiding unnecessarily long air lines.

It was suggested that while superheat is desirable for railroad stationary power plants, it must be adopted with discretion as it may cause lubrication difficulties. Powdered fuel, it was said, effects only a little saving and is difficult to handle.

Electric Traction

The report on heavy electric traction was presented by J. R. Sloan, chief electrician, Central Region, Pennsylvania. From the manner in which this report was prepared, the greater part being in the form of an extensive table, only a

small part was read. The table listed the kind of equipment used by railroads which have electrified divisions. After presenting the report Mr. Sloan called on Mr. Allen, of the General Electric Company, to give a short talk upon the general subject. In response to this invitation Mr. Allen outlined briefly the various problems likely to be encountered in electrification projects, dwelling particularly upon what he considered a very important development, namely, the automatic substation. Mr. Sloan then called upon Q. W. Hershey, of the Westinghouse Electric & Manufacturing Company.

Mr. Hershey said that he felt the subject of electrification was one that should be considered from the standpoint of the road, the main issue being whether or not a road should electrify, rather than the consideration of the details of operation. Mr. Sloan added that it was more a matter of economy than of engineering. One type of electrification, he said, might be better suited than another to certain roads, but the economics of the question are changing continually, and 10 years ago a road which might have lost money by electrifying, might now find the proposition financially sound.

A. G. Oehler, of the *Railway Age*, called attention to the fact that so many associations were interested in the subject of electrification that various roads were being asked for so much duplicate information that it was becoming more or less of a nuisance to them. He suggested that the A. R. E. E. should prepare to take part in a movement, including all of the interested societies, to do away with unnecessary duplication of work. Mr. Billau stated that the committee had this matter under consideration.

In reply to a question as to whether or not electric locomotives were in use in switching service, it was stated by one of the manufacturers that electric locomotives could be built for any class of service desired for operation on either alternating or direct current. It was stated that the St. Paul was using a switching locomotive operating at a speed of from eight to ten miles an hour. Mr. Wanamaker emphasized the importance of a thorough consideration of electrification from the standpoint of greatly increased transportation facilities. He said that the railroads wanted all the information they could get on the subject. He also touched upon the relation of banking interests to the general subject.

Train Lighting

The train lighting report was presented by Mr. Billau. This report was substantially the same as when presented at the semi-annual convention in June, with a few minor changes, which were recommended at that meeting. Mr. Billau stated that the report as it stood now had already been accepted by the Committee on Train Lighting and Equipment of the American Railway Association. Some changes were suggested and Mr. Billau recommended that these be incorporated in next year's report.

The portion of the report dealing with battery box clearance, which was recommended last June, was read by E. Lunn, chief electrician, Pullman Company. The general consensus of opinion on that point seems to favor increased battery clearances, wherever they have been tried out. The question of direct drive was also touched upon and it was suggested that the committee give this matter some consideration in next year's report.

The report on Electric Repair Shop Facilities and Equipment was submitted by E. H. Hagensick, electrical engineer, Union Pacific. The object of the committee was to outline the requirements of a suitable electric repair shop for taking care of shop motors and various other electrical repairs apart from train lighting equipment, with the possible exception of armature repairs for train lighting generators. The principal point emphasized was the necessity for adequate facilities for performing the work required properly and efficiently. It was pointed out that too many times repair shops receive practically no attention whatever, or were located in some out of the way corner, without any opportunity of functioning efficiently.

Electric Trucks and Tractors

The final report of the convention, which was presented on Friday morning, was on the subject of Trucks and Tractors. It was stated that the work of the committee was of a preliminary nature, due to the fact that this work was the first of its kind to be done. It was found difficult to get much concrete information, for the reason that the field is extremely large. The chairman of the committee stated that the information secured had been obtained by a questionnaire sent out to the operating officials of the various roads. This course was pursued for the reason that trucks and tractors are at present largely in the charge of storekeepers and freight agents. In answering the questionnaire one road took the matter on a strictly labor basis, while another gave quite full details as to just how they arrived at the figures presented. The majority of the roads say they are saving money, but cannot tell how much on account of the fact that the equipment is not in charge of technical officers.

On the request of the committee, K. R. Hare, district manager, Transportation Engineering Corporation, gave a brief outline of some of the conditions he had found in his experience in connection with truck and tractor users. Mr. Hare emphasized the importance of making an individual study of conditions existing in any locality before making an attempt to specify truck, tractor or trailer equipment. He said that installations sometimes fail simply because conditions were not suited to standard equipment, whereas if special equipment was installed they were completely successful. Three-wheel tractors, he said, have a decided advantage in turning in narrow places. He cited one instance where a saving of $50,000 a year was being used to pay for the equipment installed, which made the saving possible. Computing the savings in terms of men, he stated, the work of as many as 25 men per tractor had been saved, and that the average saving was about the equivalent of 10 men. These figures refer to conditions such as found in freight houses, loading platforms and similar classes of work. In shops the lift type of truck has become most popular where it is possible to use them. Loading skids are now generally used.

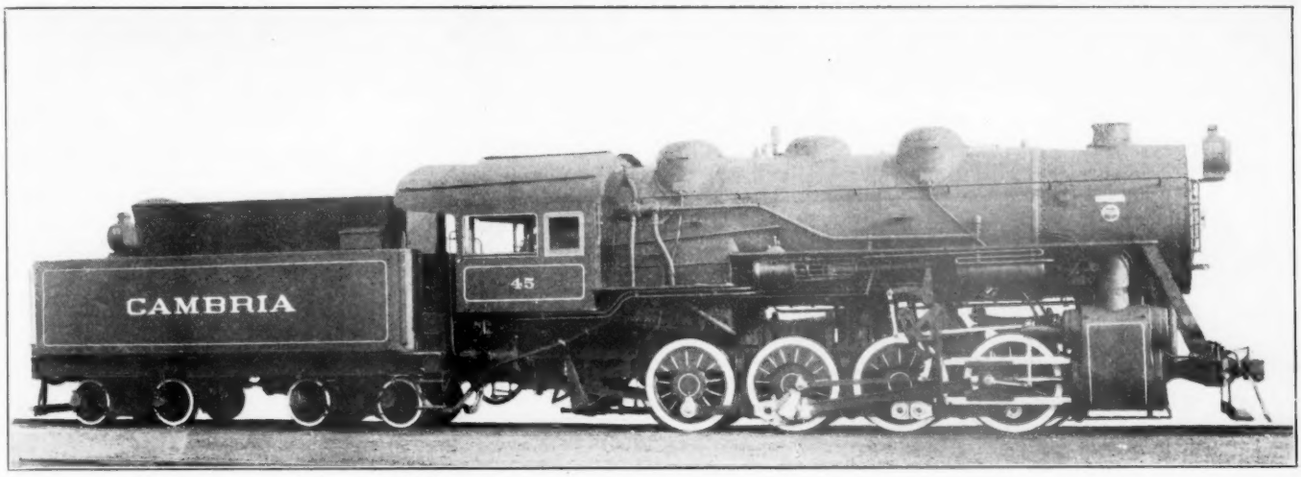
For small shops the ordinary load-carrying truck is possibly the most efficient. As a comparison, it was stated that the ordinary hand truck was capable of handling about 300 lb. at a speed of approximately one and a half miles an hour, whereas the load-carrying truck could easily handle 4,000 lb., at a speed of from three to four miles an hour.

It is important to have some one on the ground who understands trucking thoroughly, so that a system can be adopted which is effective. It was also pointed out that each installation was special, and that if necessary, specially designed equipment must be used in some cases, in order to secure successful results.

It was stated that such gasoline tractors as are in use find their application almost exclusively in industrial plants. Practically all trucks used on the railroads are of the electric type.

One of the most important factors in connection with any truck or tractor installation is the need of a good roadway over which the equipment is operated.

The meeting was concluded by the election of officers. The officers elected were: President, L. C. Hensel, electrical engineer (St. L.-S. F.); senior vice-president, E. S. M. MacNab, car lighting engineer (G. T.); junior vice-president, E. Lunn, chief electrician, Pullman Company. Two new members elected to the executive committee were Charles R. Sugg, electrical engineer (A. C. L.), and E. Marshall, electrical engineer (G. N.).

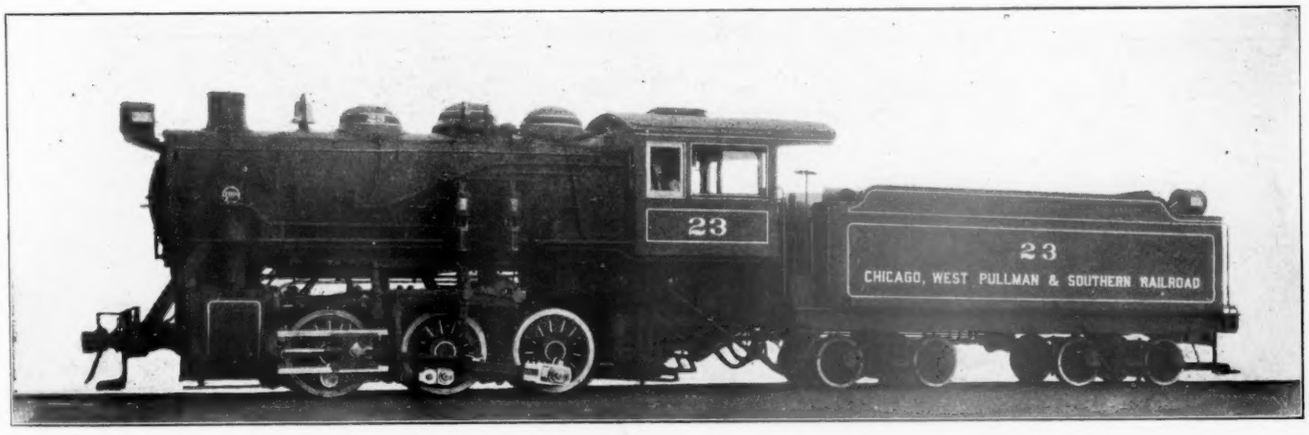


High Capacity Switcher for Cambria Steel Company

Heavy Power for Industrial Switching Service

Description of Several Interesting Locomotives Recently Designed for Industrial Service

THE DESIGN of locomotives for industrial service presents an interesting variety of types. The fuel problem does not affect the industrials to the same extent that it does the railroads, hence these locomotives have less to show in the way of refinements although the use of the superheater is becoming quite general on industrial switching locomotives. The power reverse gear has also come into general use as the value of this device as a time saver in switching service is recognized in industrial as well as in railroad yard service. The predominating characteristics of this class of power are simple, rugged construction and high capacity.



Six-coupled Switcher with Young Valve Gear

Cambria Eight-Coupled Switcher

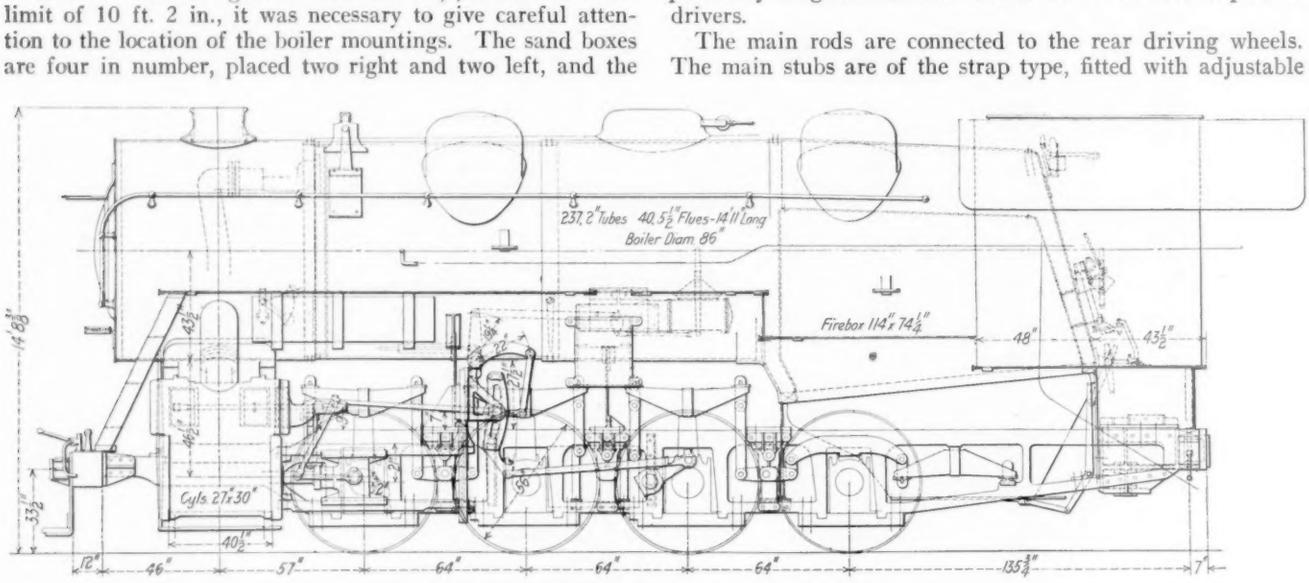
The Baldwin Locomotive Works has recently delivered two eight-coupled switching locomotives to the Cambria Steel Company which were designed in accordance with the regular practice of the builders. The design is simple throughout, with all parts of ample strength for severe service. These locomotives operate on maximum grades of 1½ per cent combined with curves of 12 deg. and they are capable of traversing curves as sharp as 24 deg. They are notable chiefly because of their high capacity. They exert a maximum tractive effort of 68,000 lb., which has not been exceeded by any other eight-coupled non-articulated locomotive thus far completed by these builders. The engines operate on rails weighing 85 to 100 lb. per yard.

The boiler is of the straight top type with a wide firebox and has the unusual diameter for a switching locomotive of 86 in. The front end of the firebox is supported by three rows of Baldwin expansion stays. The grates are arranged with drop-plates at the front and rear, and the ash pan has a single hopper of large capacity. A power operated firedoor is installed. The frames are six inches wide, of heavy construction, each frame being cast in one piece with a single front section to which the cylinders are bolted. The transverse braces include steel castings at the second and third pairs of driving pedestals which extend the full length of the pedestal jaws. The frames are also braced transversely between adjacent driving wheels. The locomotives are cross equalized in front and the equalization system is divided between the second and third pairs of driving wheels.

The valve motion, which is controlled by a Ragonnet power reverse, is of the Walschaert type designed to give

the valves a lead of 1/8 in. The crosshead links are attached directly to the wrist pins, an arrangement which simplifies the construction and reduces weight, and is desirable provided there is room for a sufficiently long combination lever. With a maximum height limit of 14 ft. 8¾ in. and a width limit of 10 ft. 2 in., it was necessary to give careful attention to the location of the boiler mountings. The sand boxes are four in number, placed two right and two left, and the amount of space, has been placed at the side of the firebox on a level with the mud ring. The reverse shaft is placed between the second and third pairs of drivers; and the links, which are driven directly from the crosshead pins, are supported by longitudinal bearers outside of the second pair of drivers.

The main rods are connected to the rear driving wheels. The main stubs are of the strap type, fitted with adjustable



Elevation, Cambria Eight-coupled Switcher

bell is mounted on the round of the boiler on the left hand side. The cab roof is shaped to conform to the Pennsylvania Railroad clearance diagram.

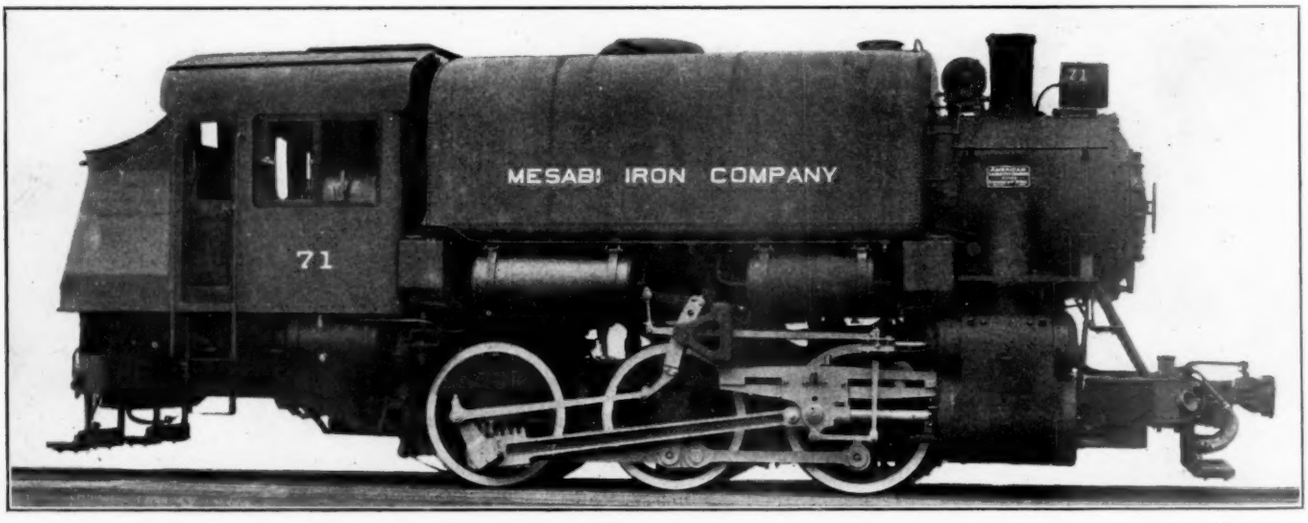
Six-Coupled Switcher for Transfer Service

Another heavy switching locomotive recently built by the Baldwin Locomotive Works is for the Chicago, West Pullman & Southern. This is a six-coupled switcher and is one of the heaviest locomotives of this type ever constructed by these builders. It weighs 178,200 lb. and develops a tractive effort of 44,400 lb.

The cylinders are 23 in. in diameter with a 28 in. stroke and piston valves 14 in. in diameter are used. The valves have a steam lap of 1 5/16 in. and are set with a 3/16 in. lead, the travel being 8¼ in. The maximum cut-off is 88½ per cent. The Young valve gear is applied and is controlled by a Ragonnet power reverse which, owing to the limited cast steel wedges, and so designed that the brasses can be removed without taking down the straps. The piston heads are of steel, and are made with a dished section to reduce weight. The boiler is of the straight top type with a wide firebox. The locomotive is equipped with a superheater and has a power operated fire door.

Heavy Saddle Tank Locomotives

The saddle tank type of locomotive still occupies a prominent place in industrial switching service. The additional load imposed by the water and fuel carried increases the factor of adhesion materially and where sustained boiler capacity is not the most important factor, locomotives of this class can render very effective service. In fact it is probable that the type would prove very useful in certain classes of railroad service as in coach yard work or more particularly in switching service around mine tipples.



Saddle Tank Locomotive with Over 35,000 Lb. Maximum Tractive Effort

The American Locomotive Company has recently designed an unusually heavy locomotive of this type which has met with considerable favor in industrial service. The locomotives are designed to operate on lines having 4 per cent grades and 12 deg. curves. Unusual flange wear is anticipated and flange lubricators of the Swanson type are applied. The locomotives have Westinghouse air brake equipment for train service and the American steam brake for locomotive use. On account of the restricted space available for the air pump, they are applied in such a manner that provision must be made for lowering them through the locomotive cab.

Three of these locomotives have been delivered to the Chino Copper Company, one to the Jeffrey Manufacturing Company and three to the Mesabi Iron Company. The locomotives for the Mesabi Iron Company are equipped with superheaters. These engines have a tank capacity of 2,500 gal. and fuel capacity of 2½ tons.

Principal Dimensions

The principal dimensions of the locomotives described are as follows:

	Baldwin Locomotive Works		American Locomotive Co.
	Eight-coupled switchers	Six-coupled switchers	Saddle tank locomotive
General data:			
Tractive effort	68,000 lb.	44,400 lb.	35,100 lb.
Factor of adhesion	4.0	4.0	4.7
Weight in working order	270,000 lb.	178,200 lb.	165,000 lb.
Weight of engine and tender	425,000 lb.	338,700 lb.	.....
Wheel base, driving	16 ft.	11 ft.	10 ft. 6 in.
Wheel base, engine and tender	52 ft. 2 in.	46 ft. 11½ in.	.....
Cylinders:			
Diameter and stroke	27 in. by 30 in.	23 in. by 28 in.	21 in. by 26 in.
Valves:			
Diameter	14 in.	14 in.	11 in.
Wheels:			
Driving diameter over tires	56 in.	51 in.	50 in.
Boiler:			
Working pressure	205 lb.	180 lb.	180 lb.
Diameter	86 in.	78 in.	62 in.
Firebox, length and width	114 in. by 74¼ in.	90 in. by 66 in.	90⅛ in. by 41¼ in.
Tubes, number and diameter	237-2 in.	228-2 in.	128 ft. 2 in.
Flues, number and diameter	40-5½ in.	36-5½ in.	19-5½ in.
Tubes and flues, length	14 ft. 11 in.	12 ft. 6 in.	10 ft. 6 in.
Heating surface, tubes and flues	2,710 sq. ft.	2,126 sq. ft.	982 sq. ft.
Heating surface, firebox	238 sq. ft.	158 sq. ft.	119 sq. ft.
Heating surface, total	2,948 sq. ft.	2,284 sq. ft.	1,101 sq. ft.
Superheater heating surface	750 sq. ft.	552 sq. ft.	227 sq. ft.
Grate area	57 sq. ft.	41.2 sq. ft.	25.8 sq. ft.
Tender:			
Water capacity	8,000 gal.	8,000 gal.	2,500 gal.
Coal capacity	14 tons	14 tons	2½ tons.

Railway Executives Meet in New York

THE MEMBER ROADS of the Association of Railway Executives met in the board room of the New York, New Haven & Hartford in the Grand Central Terminal, New York, Friday, October 29.

The attitude of the Association regarding the centralization of the settlement of labor disputes into the hands of adjustment boards was discussed at some length. The Association as a result of this meeting has gone on record as opposed to this centralization. Section 302 of the Transportation Act, under which the railroads are prepared to demand freedom of action, reads that "railroad boards of labor adjustment may be established by agreement between any carrier, group of carriers as a whole, any employees or subordinate officials of carriers, or organization or group of organizations thereof."

The railway labor unions proposed to the Association that it join with them in certifying as a dispute to the National Railway Labor Board the question of the establishment of these boards to decide all railway labor questions. The Association refused to join in certifying this question as a dispute, taking the view that the decision of the question was not within the jurisdiction of the Board. It was pointed out that Section 302 of the Transportation Act provides for the formation of these labor boards upon the agreement of the carriers on the one hand and the employees on the other. The National Railway Labor Board, then, cannot make any mandatory decision without the consent of the railways; Section 302 is not operative without the joint action of the employees and the carriers; and the Association has decided that it will not, as a whole, favor the establishment of the adjustment boards at the present time. Attention was called to the fact that the Association on September 8 requested a conference with the National Railway Labor Board on the question of the establishment of these adjustment boards. The Association asked that representatives of the employees and the public be admitted to the conference. The purpose of the conference was simply to allow an exchange of views and a statement of position. The Association did not concede the authority of the Board to hand down a decision in the case. As yet the Board has not granted the Association's request for a conference.

Increase in Per Diem

The member roads of the American Railway Association have recently voted on the question of increasing the per diem rate from 90 cents to $1.10. A majority of the roads voted favorably but not enough to include the ownership of two-thirds the cars which was necessary for action. The meeting of the executives took up this matter and in view of this vote and the general reductions in prices of commodities throughout the country it was voted, after some discussion, to suggest another vote on the increase in per diem on the basis of a proposed rate of $1.00.

Some time was devoted to the reports of the various members concerning conditions on their lines. Heavier loading of cars and greater mileage per car per day were reported, showing that the campaign of the Association for "more transportation" is bearing fruit. The saving effected in speeding up car movement and in increasing the load per car was said to be equivalent to the addition of 500,000 new cars, with loading and mileage at the rate they stood when the roads were returned to their owners on March 1. Since that date the average daily mileage per car has increased from 22.3 to 27.4 and the average tonnage per car from 28.3 to 29.6.

Other facts brought out at the meeting were that 135,000 freight cars have been retired from service since federal control because of their unfitness for further use, that the number of locomotives out of service awaiting repairs is 19.7 per cent of the total in use, and that the number of freight cars in service today is somewhat less than the number at the expiration of federal control.

No Discussion of New Rates

No formal discussion took place concerning the reports of September earnings, the first under the increased rates. It was not thought best that any course of action or official opinion be decided in reference to the new rates until reports for the returns of a few more months were available. It is understood that the showing of the September earnings was a source of some disappointment to many, but some of the executives are said to have stated that the September returns were abnormal in many ways and that the full effect of the new rates would not be felt until November.

The question of the determination of the percentage to be charged for depreciation of various forms of railroad property under Section 20 of the Interstate Commerce Act, as amended by the Transportation Act, was brought up and, after some discussion, referred to the valuation committee for further investigation.

George W. Stevens

GEORGE W. STEVENS, president of the Chesapeake & Ohio, fell dead at the Greenbriar Hotel, White Sulphur Springs, W. Va., on November 3 while dictating to his stenographer. His death was due to paralysis. Mr. Stevens was 69 years old. He had been president of the Chesapeake & Ohio continuously since 1900 with the exception of the period of federal control when he was federal manager.

Mr. Stevens attained the position of president of the Chesapeake & Ohio following a training in the operating department. He entered railway service as a messenger in the employ of the Baltimore & Ohio in 1864 at the age of 13. He was employed by that road until 1870, when he became an agent on the Pittsburgh, Cincinnati & St. Louis, now part of the Pittsburgh, Cincinnati, Chicago & St. Louis. Following three years service with that road he became a despatcher on the Wabash, St. Louis & Pacific, now the Wabash, and he had worked his way up to the position of assistant general superintendent when seven years later he left to become general superintendent of the Chesapeake & Ohio.

G. W. Stevens

It would be very interesting to sketch the development of the Chesapeake & Ohio in these 30 years in which Mr. Stevens was connected with it. In 1890 when he became general superintendent the road had been out of the hands of receivers but a short time. It was then controlled by the Morgan interests and Mr. Stevens was the man that those in charge finally selected to put it on its feet. The president of the road during the period in question—namely 1888 to 1900 — was Melville E. Ingalls. Mr. Ingalls was a lawyer, and not an operating man, so that the actual operation of the property was in the hands of Mr. Stevens, who at this time held the position of general superintendent and later that of general manager. In 1900 control of the road passed to the New York Central and Pennsylvania Railroads. Mr. Ingalls resigned and Mr. Stevens succeeded him as president on February 1, 1900. When control of the road again changed in 1906 to the syndicate headed by Edwin Hawley, and Frank H. Trumbull was elected chairman of the board, Mr. Stevens was also continued in his position as president. It will thus be seen that Mr. Stevens served as operating head under no less than three different administrations. If federal control were included, one would say four. This indicates beyond question the respect paid to his knowledge of the Chesapeake & Ohio and his ability to operate it successfully. It will be noted, however, that Mr. Stevens was not at any time during his 30 years connection with the road its financial head.

Enough has been said to indicate that Mr. Stevens' sympathies were with the operating department. This will not be construed to mean, however, that he did not understand the importance of the duties of the other departments or that he failed to have a keen appreciation of their problems. As an operating officer he was a strict disciplinarian. The stories told of him are to the effect that he had a temper by no means mild, but that when the storm was over, it was settled and all concerned were friends again. His popularity with the rank and file and with his fellow officers was noteworthy.

An interesting sidelight on his ideas and character is shown in connection with his keen interest in Y. M. C. A. work. In the early nineties, when he was general superintendent, he assisted in the establishment of the first Y. M. C. A. on the Chesapeake & Ohio at Hinton, W. Va. This proved so successful, and so much was Mr. Stevens impressed with its success that he lent his practical and sincere co-operation, until today there is a railroad Y. M. C. A. at every division point on the Chesapeake & Ohio. Mr. Stevens had taken a great interest in the International Railroad Y. M. C. A. Conference, which will be held at Richmond, November 18 to 21. It was largely because of his cordial invitation that Richmond was selected and he had made arrangements for co-operation, with special train service, etc. He had also sent out a personal letter to a large number of railroad officers to be present at a dinner to be given by him in connection with the conference. Comment on these facts is hardly necessary.

George W. Stevens was born at Utica, Ohio, in 1851. He attended school in his native town until the age of 13. He began work in 1864 on the Baltimore & Ohio, by which road he was employed for six years, first as a messenger boy, then as agent's clerk, and later as an operator. On February 1, 1870, he went to the Pittsburgh, Cincinnati & St. Louis, now part of the Pittsburgh, Cincinnati, Chicago & St. Louis, with which road he served successively as agent, despatcher's assistant and train despatcher. From 1873 to 1890 he was employed by the Wabash, St. Louis & Pacific and its successors which now constitute the Wabash. For eight years of this period he was train despatcher. He was then for two years superintendent of the Ohio & Indiana division; for the next 3½ years superintendent of the Eastern division and from January, 1887, to 1890, assistant general superintendent. He became connected with the Chesapeake & Ohio on January 1, 1890, as general superintendent. He was later made general manager, and on February 1, 1900, he was elected president of the property, succeeding Melville E. Ingalls. With the exception of the period of federal control, when he was federal manager, he held the position of president continuously until his death. In March, 1910, he was also elected president of the Hocking Valley, and in July, 1910, president of the Chesapeake & Ohio of Indiana.

THE MEXICAN POSTAL AUTHORITIES have arranged for air mail service between Mexico City and Tampico, a distance of about 185 miles. The time to be taken for the trip, it is estimated, will be about three hours.

The Necessity for Automatic Train Control Devices*

The Failure of the Human Element at a Critical Moment Makes Necessary a Mechanical Check

By W. G. Bierd
President, Chicago & Alton

THERE IS, as is well known to all operating officers, a great necessity for something much better, more perfect and more reliable than present train control devices. The progress of train control, as we have it today, has been steady but slow. Only a short time back we had very simple signals displayed through the operator by direction of the train dispatcher. Finally we worked out the block signal system in a crude form. That had only begun to be effective when the greatest and most perfect train control device of all was handed to us in the automatic air brake as we now know it; in the beginning, however, it was not automatic and was what we then knew as the straight air brake. The braking capacity was on the engine, and its use was entirely dependent upon the engineman's application; the train, whether freight or passenger, long or short, was free. Bad results, collisions and breaking of equipment all followed when the automatic air brake was first developed. But it has been perfected to the high degree we now find it, so that when used properly we have an absolutely perfect train control, assuming that the mechanism is working as it was constructed to work. It has been so perfected that there is very little opportunity of failure. It is the operating man's experience with all of these devices which have been so ably perfected that we have perfect automatic train control, providing the human agency operates as perfectly as the apparatus.

Failure of the Human Agency

The failure of the human element is the thing now to be overcome. Nothing more would be needed than what the present automatic train control furnishes were it not for the failure of man. Therefore, we come to the point where we can no longer say automatic train control. We have to consider automatic train *stopping*. That is what we are seeking, and that function must be automatic.

We have the failure of the flagman. His duties are simple and very plain. We can discipline, educate, school, and make a very perfect flagman, but we have never been able, and we must assume that we cannot control the weaknesses of that human agency. It is really remarkable what does occur when men fail in performing their duties. I have been investigating such cases for a good many years, and I have been on the side to be investigated. I have made errors myself, and I have found every other employee of a railroad makes errors. In the train service and engine service there are three outstanding reasons for men's failure. For a long time failures were attributed to the drinking of liquor, and this was considered the greatest evil to contend with. It has been my experience, that railroad employees became a perfectly sober body of men some time back, so that the element of intoxication has not been seriously prevalent for some little time.

Yet other reasons exist. The largest number of failures of men in train service is due to various domestic troubles, such as illness in the family or illness of the man himself. Any thing that directly affects the harmony and peacefulness of the home, puts the man in an irresponsible frame of mind. When the family or home is a subject of concern to him he broods and studies over that more than any other one thing. No matter how simple, how thorough rules may be, or what precautions have been taken, men have left the classroom, instructed in every respect in their duties and upon the rules, and yet the striking thing is the way in which they forget their obligations. The mind ceases for that fatal moment to serve the man until the accident occurs, and because of that temporary derangement or absence of the mind, he makes a mistake. I have never yet found even an approach to the cure or remedy, and lack of safety is with us in the operation of trains, just so long as we rely on that human agency. A man ill is not fit to perform the duties of a locomotive engineer or a conductor, whose responsibility for the safety of the train is great.

Another important thing that there is no means of overcoming is a man's financial obligations. Just so long as things weigh down the mind to a degree that temporarily it is not a responsible one we must expect failures to occur. This has been emphasized more distinctly since our present method of signaling has been in effect than when we were dependent on the train order with the ordinary meeting point. Men have sat in their cabs knowing what the automatic signal was for, that it indicated caution or a positive stop, and yet have failed to observe or obey it and have allowed an accident to occur.

Then again we have failures that it is never possible to clear up or satisfy ourselves about.

If these things are true, and my experience has proved to me that they are true, then we must look for a truly automatic train control or train stop. That is what signal engineers have got to study and produce, if it is possible to do so. Automatic signal control of trains is about as near perfect as we could hope for, but it fails in that it cannot step in and perform the functions of the man when he fails. Therefore, we must look for and have that device, or mechanism, which will take the place of the man when he fails.

The Train Control Problem

We will have to rely upon the human agency for a time until those desired automatic devices are produced.

What should we undertake to do? Deal with and study the entire question as a whole, or first consider terminal protection? Out in the country, on straightaway lines of road it is true that the speed is higher, and to that extent the hazard perhaps the greater. We have accidents upon these tracks and with this class of trains, but in the congested terminals many movements are being made at the same time. Shall we devote our efforts to terminal protection, first?

My thought is that this is the first essential for the reason that, with any of the present mechanisms, as far as I know, the effect of high speed is not yet thoroughly overcome where the moving train and automatic control devices come in contact. I think that is the weakest point of any one of the present systems. We can work out the problem in congested terminals, because, as a result of present day operation, the speed of the trains and their approach is quite different there from what it is on high speed tracks.

Next it would be desirable to consider important crossings.

* From a talk made before the joint meeting of the Western Society of Engineers and Chicago Sectional Committee, Signal Division, A. R. A., at Chicago, October 21, 1920.

At these places is located the only positive automatic stop that we now know, the derail, but this stop is attended always with disaster when the human agency fails. The railroad crossing is of great importance, and we must find something better than the present method of forcible stopping when the human failure occurs.

Necessity for Better Protection

It is no longer necessary to talk about the need of a better train control device. I doubt if any of us realizes in our own busy life and in our own small sphere, the loss of life and limb and personal injuries and death that are occurring in this country in the operation of our trains. This is still entirely too high to even think that it should be permitted to go on, when something better can be had. The loss of life runs into hundreds yearly. It does not seem possible that a word is necessary from me to impress upon any one the necessity of a better device, if such a better device is known. Therefore, I think it is as plain to each of you in your professional life as it is to me from an operating standpoint, that such a device is absolutely necessary.

Congress has been interested in this subject for a long time, but not in the way it should have been. It was a passing interest. It directed the Interstate Commerce Commission to make certain investigations which were made and reported back to Congress.

It hardly seems reasonable that such a process should have been permitted over the period of time that has passed. Congress is a large and unwieldy body of men, viewing things from different angles, slow to act, as a central government is always slow to act in such public things, while as public agents entrusted to protect the government, they are too prone to allow the individual, the corporation or the man himself to work out the device. Individuals were allowed to work out and perfect the signal. The government gave little help and assistance to bring about such a splendid device. The same was true with the air brake, and so on throughout the list.

The Need for Government Help

The government has done nothing in this important matter and it was said that if the railroads had expended the amount of money on developing the automatic train stop or control that they have upon signaling and interlocking plants, train control would be a developed reality today.

I want to reverse that and say that if the United States government had expended as much money to develop a train control device as it has expended upon its agents traveling through the country to try to find out the details of what caused accidents and injured or killed people, we would have developed and perfected a train control device today. The railroads are practically in the hands of the Interstate Commerce Commission. Congress has taken a definite and direct step in the right direction, and it has said to the Interstate Commerce Commission that "you are now empowered to say to and compel the railroads to develop and operate, as early as possible, these improved automatic train controls or train stops."

I believe that Congress should be appealed to through the Interstate Commerce Commission for a definite and ample appropriation of money with which to employ the best talent there is, divorcing the men from their many duties at home, and put them upon this task; let them develop and perfect it, and it will be unnecessary for this device to go through a long process of development as did the signal, the air brake and the other safety appliances on railroads today.

Therefore, it is my conclusion, that our general government will not have performed its full duty until it has made proper appropriation and placed it in the hands of the Interstate Commerce Commission, with direction that it shall be used to perfect this much needed device.

Wood Preservation Statistics for 1919

TIMBER PRESERVATION in the United States received a considerable impetus during 1919, which has served in some measure to overcome the gradual decline of this industry since the banner years of 1913 and 1914. This is the predominating fact brought out by the statistical report prepared by the United States Forest Products Service in co-operation with the American Wood Preservers' Association and published in the annual proceedings of that organization.

According to these statistics the volume of wood treated in 1919 was 139,878,584 cu. ft. as compared with 122,612,890 cu. ft. in 1918. The number of railroad cross-ties treated in 1919 was 37,567,927, as compared with 30,609,209 in 1918. The amount of piling treated in 1919 was 13,557,519 lin. ft. as compared with 12,286,517 lin. ft. in 1918. In wood blocks there was a reduction in the total from 2,398,869 sq. yd. in 1918 to 1,795,687 sq. yd. in 1919. There was also a reduction in the treatment of cross arms, the total in 1919 being 121,507 or about one-sixth of the total for 1918. The treatment of construction timbers aggregated 144,742,477 ft. b.m., representing a healthy increase over the preceding year.

With an increase in the activity in the timber treating industry, there has been a corresponding increase in the consumption of preservatives in both foreign and domestic creosotes and in zinc chlorides. The total consumption of creosote was 65,556,247 gal., or over 12,000,000 gal. more than was reported the year before. Of the total for 1919, only 11,268,379 gal. was imported creosote, although this represents a large increase over the amount of this preservative imported in 1918. Zinc chloride is becoming an increasingly important factor in the timber preserving field as indicated by the consumption of 43,483,134 lb. of zinc chloride in the past year, exceeding the quantity used in 1918 by 12,382,023 lb.

The table shows comparison of the consumption of preservatives from 1909 until 1919, inclusive.

CONSUMPTION OF WOOD PRESERVATIVES BY THE TREATING PLANTS OF THE UNITED STATES, 1909 TO 1919

Year	Plants, number	Creosote (a), gallons	Zinc chloride, pounds	Other Preservatives (b), gallons
1909	64	51,431,212	16,215,107	(c)
1910	71	63,266,271	16,802,532	2,333,707
1911	80	73,027,335	16,359,797	1,000,000
1912	84	83,666,490	20,751,711	3,072,462
1913	93	108,373,359	26,466,803	3,885,738
1914	94	79,334,606	27,212,259	9,429,444d 2,486,637
1915	102	80,859,442	33,269,604	3,205,563d 1,693,544
1916	117	90,404,749	26,746,577	5,675,095d 582,754
1917	115	75,541,737	26,444,689	7,579,819d 137,361
1918	107	52,776,386	31,101,111	4,057,862d 28,013
1919	108	65,556,247	43,484,134	2,412,592d 102,011

(a) Includes coal-tar creosote and water-gas tar.
(b) Includes refined coal-tar, corrosive sublimate, and carbolineum oils.
(c) Statistics not available.
(d) Paving oil.

The number of railroad cross-ties treated in 1919 was 37,567,927, as stated above. Of this total 26,662,277 were hewed and 10,905,650 sawed. Oak ties which formerly led in quantity treated dropped to second place with a total of 13,082,530, pine ties taking first place with a total of 13,896,820. Douglas fir ties were third with 4,085,950, and western pine fourth with 1,641,265.

As was the case in 1918 more cross-ties were treated with zinc chloride than with creosote. The number of ties that were injected with the first-named preservative was 19,637,448, while 14,979,405 ties were treated with creosote. A total of 2,950,074 ties were given the emulsion treatment, and 1,000 ties were treated with miscellaneous preservatives.

The Bridge and Building Convention at Atlanta

Reports on Forms for the Inspection of Structures and on the Reclamation of Materials

THE REPORT of the principal activities of the Thirtieth Annual Convention of the Bridge and Building Association which was held in Atlanta, Ga., on October 26-28, inclusive, was published in the issue of last week. Owing to lack of space it was necessary to hold out two reports which are abstracted below, together with a report on the closing business of the convention.

Report on Standard Forms for Bridge Inspection

To fulfill all the needs and serve as a standard pattern, any series of forms worthy of recommendation must conform to the following principles:

1. Facility in recording notes and saving the man in the field all unnecessary and onerous labor is a first requisite.
2. A diagram, sketch, or caricature of the structure to be inspected is a distinct necessity.
3. Provision for accurately recording conditions and findings which can be interpreted correctly in a review of the notes by anyone at any time subsequent to the inspection is essential.
4. Clarity of reference in the notes to any particular member so that the thought of the inspector cannot be misconstrued is of prime importance.
5. Utilization of the notes for maintaining correct office records of the consist of structures presents the best and most economical method known.
6. Provision for the compiling of field notes in a readily accessible form for subsequent use and future reference in the office is imperative.
7. A minimum of labor and expense must be involved in equipping the inspector with a concise and compact record of the consist of structures and findings of previous inspections.
8. The inspection is only the first step in the maintenance of structures, and the inspector's notes form the basis of the entire program of work. Forms, therefore, must facilitate the work of compiling bills of materials, making requisitions, and the issuance of shipping directions without error or confusion.
9. Any common standard proposed must be adaptable to all railroads regardless of mileage or form of operating organization, sufficiently comprehensive to cover all types of structures, and adequately elastic to permit of general or detailed expansion.
10. Simplicity and economy consistent with the end sought dictate that the number of forms be a minimum.

With these premises as a guide, the work of preparing a series of standard forms was undertaken. Some scheme of forms embodying sketches of structures was first considered. This immediately suggested the segregation of metal from wooden bridges. The sketch system was finally abandoned as entirely impracticable. Final recourse was had to the method of symbolic reference and forms worked out along this line. As the work and study progressed, it was evident that, by this method, one style of forms could be made to cover every type of bridge structure used. Great difficulty was encountered in symbolizing the different types of structures and kinds of construction. The symbols, as finally adopted, consist usually of the initial letter of the word or words by which the structure or kind of construction is customarily described.

With these conditions as a basis a series of four forms were presented, the first being a key to structural types and kinds of construction, the second a record on which is entered the formation as to the type, consist or make up of the structure, the third designed for use with culverts, cattle guards and other structures for which the second form is not adapted and the fourth for both detailed and summarized results of the inspection. A card index system of records for culverts was also presented.

Arthur Ridgway (D. & R. G.); G. E. Boyd (D. L. & W.); W. A. Clark (D. & I. R.); J. T. Harvey (B. & A.); R. H. Helick (Penna.); C. W. Lentz (I. C.); M. E. Nelson (A. C. L.); J. J. Taylor (K. C. S.) Committee.

Report on the Reclamation of Bridge, Building and Water Supply Materials

Changing conditions cause us to be constantly on the alert and we find ourselves frequently changing our points of view. This is nowhere revealed more forcibly than in our attitude toward the reclamation of building materials. That which was not worth the trouble of picking up a few years ago has so increased in value that it is very much worth while to spend considerable labor to reclaim it for further use.

On the Chicago, Milwaukee and St. Paul an effort is made to utilize all timber and lumber taken out of old structures to the best possible advantage. Bridge stringers that are too short for use in standard openings are resawed to sizes that will make sills for hand car houses, coal and oil houses, and outbuildings around smaller stations, and skids in the lumber yard. This material is given a treatment of carbolineum at the time it is resawed. Bridge ties are also resawed and pieces that are free from defects are used to make spacing blocks between ties on iron bridges, while such as are defective are used in loading concrete pipe to prevent the sections of pipe from coming in contact with each other. Much of the above material is also used for car stakes. The rippings from the resawing are used to make crates for material that cannot be shipped open. The usable portions of brace plank are cut to lengths in multiples of two feet and are used in highway crossings or sent out to concrete crews for use as runways or platforms on which to unload material. Cedar pile heads are sent to the mill and returned as shingles. Piles that have been pulled because of line changes and that are in good condition are used as foundation piles under masonry. At the company's Milwaukee shops a great deal of second hand bridge material is worked up for flat car floors, and such as is not good enough for that is converted into coal and grain door boards. At the Tomah plant second hand one-inch lumber is sorted into three grades; first grade, all lumber that is considered suitable for concrete forms above the ground level; second grade, such as can be used for concrete forms below the ground line; third grade, all short pieces or such as are split or have defects that can be cut out are used in the manufacture of boxes such as are used by the store department for shipping switch bolts and other material, and works off very rapidly. All 3-in. by 6-in. lumber is sorted into two grades, putting into the first grade such as can be used for concrete forms while the shorter lengths are classed as second grade and used as car stakes. All of this material is graded at the time of unloading and each grade is kept separate where it can be gotten at readily.

On the Philadelphia and Reading the materials recovered

by the bridge department are turned over to the stores department for reclamation. A large number of bridge ties 9 in. by 12. in. by 12 ft., after having been in service about 18 years, have become bad on top to a depth of several inches. It is found that about 95 per cent of them are solid in the dap over the girders or bridge chords. When these ties are taken off all spikes are removed and they are then shipped to the saw mill and five inches of the top sawed off, leaving a tie 7 in. by 9 in. by 12 ft. in good condition for use on industry trestles and places where the lighter tie will answer. The cost of loading, transporting, sawing and shipping from the mill to the store yard is much less than the cost of new ties, and they will last from 7 to 8 years on commercial trestles. Valves, that were considered worn out, are taken out and repaired at the shops at comparatively small cost, making them practically as good as new.

On the Kansas City Southern hardware recovered from old trestles, such as bolts, washers and spikes, is all used again in the reconstruction of the trestle as far as usable. Guard rail bolts that cannot be reused as such are used in place of boat spikes or line spikes. Old chord bolts or sway brace bolts similarly damaged are used for drift bolts. By this plan it is found necessary to purchase very few drift bolts or boat spikes. The same rule is applied to water service material. When renewing wooden tubs, water tanks, etc., all usable material such as supports, staves and hoops is salvaged and used for replacing decayed staves or weak hoops and supports on other old tanks of similar construction. All second hand pipe is recovered and when necessary the ends are cut off and rethreaded. Globe valve seats are reground and the serviceable parts of old valves are used in making repairs. The same plan is followed with pumps. Only such parts are scrapped as cannot be used for repair work.

On the New York, New Haven and Hartford recovered water pipe of 3-in. diam. or over, that is not good for high pressure, is used for drain pipe, and old leaky valves are sent to the storekeeper to be repaired.

On the Lehigh Valley a portable gasoline engine and circular saw are set up at the various places and the lumber taken out and sawed to sizes suitable in other work. The cost of sorting and sawing second-hand lumber ranges from $6 to $10 per thousand, depending on the quantity of lumber involved. Eye bars from iron bridges are sent to the locomotive shop for general use; I-beams, angles and heavy plates are usually taken in stock for future use; heavy floor beams of double track bridges are retained for use as longitudinal girders; deck plate girders are doubled up and reused; heavy double track girders are used for single track bridges, and such material as cannot be reused is disposed of as scrap as it comes from the bridge without cutting it apart. In removing water station material, a careful examination is made of all parts. In the case of pipe lines, when accessible, the joints are heated with an acetylene torch and the pipe and lead are stored for future use; in case of fixtures partly defective, the defective parts are renewed and fitted to other fixtures for reuse. Wrought pressure pipe which has become defective can often be used for wire conduits, saving the purchase of new conduit pipe. Any valves removed are carefully examined, any damaged or worn parts replaced and the valves again put in use. The extreme rise in the cost of all materials makes it imperative that the utmost use be obtained from all materials; while the cost of labor has also advanced, the use of mechanical means for salvaging and reclaiming materials reduces the cost of handling, and should generally show a considerable profit. It also conserves the available supply of new material and in a measure assists in keeping the prices from mounting still higher.

On the New York Central many old bridge ties are sent to the mill and resawed into frog blocking, this one item alone saving many thousands of dollars yearly. Oak pile butts are resawed into track shims. Old trestle timber is used over as far as possible.

On the Baltimore & Ohio large shops have been organized and are in operation at Martinsburg and Zanesville for the reclamation of old bridges, frogs, switches, track appliances, water station material, turntables, hand cars, baggage trucks, track scales and miscellaneous maintenance of way work. The shop at Martinsburg has been in operation for a number of years and has very clearly demonstrated its practical value and economy. In the rebuilding of bridges old spans are strengthened for branch lines and highway bridges. The cost of the work runs approximately 40 per cent of what new bridges would cost after allowing scrap value for the material. Short turntables of 60 ft. and under are worked over, the girders inverted and the necessary floor system installed for highway bridges. On water station work it has been found practicable to rebuild a great number of pumps at a price far below what it would cost to purchase new, including the scrap value of the pumps.

The Chicago & North Western has three saw mills for working up old second-hand bridge timbers, located at Boone, Ia., Winona, Minn., and Norfolk, Neb. The two former are electrically equipped while the latter is operated by a gasoline engine of 30 h. p. Bridge timbers are sawed into all sizes of smaller standard material and the lumber used for small buildings of every description. Cedar pile heads are sawed into shingles. Other pile heads are used for jack handles, car stakes, etc.

G. T. Richards (C. M. & St. P.), chairman; P. Aagaard (I. C.); F. E. Schall (L. V.); J. J. Murphy (S. P.); W. A. Pettis (N. Y. C.); G. W. Andrews (B. & O.); J. J. Wishart (N. Y., N. H. & H.); W. J. Jackson (C. & N. W.), committee.

Election of Officers

At the annual election of officers of the Bridge and Building Association on Thursday morning the following officers were elected: President, W. F. Strouse, chief engineer, Public Service Commission of Maryland, Baltimore, Md.; first vice-president, C. R. Knowles, superintendent water service, Illinois Central, Chicago; second vice-president, Arthur Ridgeway, assistant chief engineer, Denver & Rio Grande, Denver, Colo.; third vice-president, J. S. Robinson, division engineer, Chicago & North Western, Chicago; fourth vice-president, J. P. Wood, supervisor of bridges, Pere Marquette, Saginaw, Mich.; secretary-treasurer, C. A. Lichty, Chicago & North Western, Chicago. Members of the executive committee were chosen as follows: One year: A. B. McVay, supervisor of bridges, Louisville & Nashville, Evansville, Ind.; J. H. Johnston, Grand Trunk, Montreal; E. T. Howson, *Railway Age*, Chicago; two years: C. W. Wright, master carpenter, Long Island, Jamaica, N. Y.; G. A. Manthey, assistant superintendent of bridges and buildings, Soo Line, Marquette, Mich.; E. K. Barrett, supervisor bridges and buildings, Florida East Coast; St. Augustine, Fla. New York City selected as the location for the next convention.

The annual dinner was held at the City Club Wednesday evening. Part of Wednesday afternoon was devoted to an inspection of the new Hills Parks shops and the Chattahoochee River bridge of the Nashville, Chattanooga & St. Louis by special train. Following adjournment on Thursday noon a party attended a barbecue at Stone Mountain, going by special train over the Georgia Railroad.

SEVEN TICKET SELLERS of the Pennsylvania Railroad at the terminal station at New York City were dismissed on October 31, and a statement given out by the railroad company says that these clerks had accepted gratuities from passengers for favoring them in the sale of space in Pullman cars, holding back space from passengers who did not pay more than the regular price.

Heavy Freight Traffic Continues

WASHINGTON, D. C.

THE NUMBER OF CARS of revenue freight loaded passed the million mark for the second time this year during the week ended October 16, according to reports received by the Car Service Division of the American Railway Association. The total for the week, 1,005,663, was 4,124 less than that for the week of October 2, but was 33,000 greater than that for the corresponding week of 1918. There was an increase in the loading as compared with the corresponding week of 1919 in all districts except the Central Western and an increase as compared with 1918 in all districts. Increases were shown as compared with 1919 in the number of cars loaded with coal, coke, forest products, ore and merchandise and miscellaneous freight combined, but decreases in the number of cars loaded with grain and grain products and livestock. The coal loading was 227,642 as compared with 217,416 in 1919. The report follows:

REVENUE FREIGHT LOADED AND RECEIVED FROM CONNECTIONS

SUMMARY—ALL DISTRICTS; COMPARISON OF TOTALS THIS YEAR, LAST YEAR, TWO YEARS AGO, FOR WEEK ENDING SATURDAY, OCTOBER 16, 1920

Districts	Year	Grain and grain products	Live stock	Coal	Coke	Forest products	Ore	Mdse. L. C. L.	Miscellaneous	Total revenue freight loaded: This year, 1920	Total revenue freight loaded: Corresponding year, 1919	Total revenue freight loaded: Corresponding year, 1918	Received from connections: This year, 1920	Received from connections: Corresponding year, 1919	Received from connections: Corresponding year, 1918
Eastern	1920	6,456	3,206	58,067	3,751	8,553	10,609	47,431	99,379	237,451	.....	.....	254,795	.....	.....
	1919	6,756	3,672	58,641	3,006	8,105	6,095	25,651	121,795	.....	233,721	225,936	.....	255,860	253,170
Allegheny	1920	2,472	3,512	70,670	5,694	4,066	14,323	37,828	75,924	214,489	.....	.....	147,467	.....	.....
	1919	3,083	3,640	65,691	3,224	4,458	8,989	41,015	71,431	.....	201,531	206,270	.....	147,404	171,725
Pocahontas	1920	81	471	23,834	772	1,839	336	2,646	7,625	37,604	.....	.....	19,648	.....	.....
	1919	176	446	22,786	604	2,070	264	129	9,709	.....	36,184	35,363	.....	20,110	24,596
Southern	1920	3,063	2,715	29,059	1,570	19,756	3,315	36,707	37,869	136,074	.....	.....	77,370	.....	.....
	1919	3,093	3,169	26,557	319	18,637	4,147	20,629	56,402	.....	132,953	115,648	.....	76,912	70,621
Northwestern	1920	14,020	9,701	11,568	1,732	15,368	44,563	29,140	40,843	166,935	.....	.....	59,562	.....	.....
	1919	14,407	11,474	14,155	745	15,946	31,211	23,400	50,387	.....	161,725	159,951	.....	54,527	91,908
Central Western	1920	10,202	12,926	27,458	468	5,945	3,017	30,914	51,392	142,322	.....	.....	71,205	.....	.....
	1919	11,275	16,910	23,021	386	5,729	2,372	24,279	58,468	.....	142,440	127,878	.....	79,449	67,066
Southwestern	1920	3,684	2,865	6,986	152	7,146	371	17,795	31,789	70,788	.....	.....	52,316	.....	.....
	1919	4,227	3,509	6,565	151	6,116	256	13,176	29,524	.....	63,524	56,088	.....	50,683	54,375
Total, all roads	1920	39,978	35,395	227,642	14,139	62,673	76,534	204,461	344,841	1,005,663	.....	.....	682,463	.....	.....
	1919	43,017	42,820	217,416	8,435	61,061	53,334	148,279	397,716	.....	972,078	.....	.....	694,945	.....
	1918	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	927,134	.....	.....	723,531
Increase compared	1919	.....	.....	10,226	5,704	1,612	23,200	56,182	.....	33,585	.....	.....	.....	.....	.....
Decrease compared	1919	3,039	7,425	.....	.....	.....	.....	.....	52,875	.....	.....	.....	12,482	.....	.....
Increase compared	1918	.....	.....	.....	.....	.....	.....	.....	.....	78,529	.....	.....	.....	.....	.....
Decrease compared	1918	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	41,068	.....	.....

*L. C. L. merchandise loading figures for 1920 and 1919 are not comparable as some roads are not able to separate their L. C. L. freight and miscellaneous of 1919. Add merchandise and miscellaneous columns to get a fair comparison.

Accompanying this increase in business there was a decrease in the car shortage amounting to 6,000 cars. For the week ending October 15 the average daily shortage was 69,517, including 31,000 box cars and 26,000 coal cars, as compared with 75,336 for the week ending October 8. The reduction in the shortage was due partly to the clearing of the congestion at terminals and in part to a lessened demand for cars.

The accumulations of freight cars on hand in excess of current movement during the week ending October 22 were reduced to 39,807 cars, of which 17,390 were held awaiting export or coastwise movement. This represents a decrease of nearly 4,000 cars in a week. Particularly satisfactory is the reduction in the number of cars held for reconsignment, which was 2,572. In July there were over 3,500 cars held for reconsignment but the later figures show that the restriction of the reconsignment privilege authorized by the Interstate Commerce Commission has had its effect.

Coal Situation Shows Marked Improvement

As illustrating the improvement in the coal situation, the Interstate Commerce Commission, in a press notice issued last week in connection with its suspension of the lake priority order, called attention to the fact that since October 15 it has not been found necessary to issue a priority order for any public utility or government agency, as the needs of such institutions have been taken care of out of the current car supply. The withdrawal of Service Order No. 10, the commission said, leaves in force no priorities except a general priority of coal over other traffic moving in open top cars suitable for coal loading, and about 170,000 cars have been specially released from that priority order for the movement of building and road materials and certain perishables, such as sugar beets. The commission did not mention the priority order issued for Navy coal to be shipped to tidewater, doubtless because that order was not issued on account of the transportation emergency, but under the general war powers, to enable the Navy to purchase its coal at a lower price. It is the general assumption among those in touch with the coal transportation situation that the general coal priority order may be withdrawn in the next two weeks, as the suspension of Service Order No. 10 should enable the mines and railroads to take care of the central territory, in which there has been a shortage of coal for domestic use, and also should make more fluid the movement of traffic throughout that territory and enhance the general car supply.

Coal Production

According to preliminary estimates of the Geological Survey, the production of soft coal during the week ended October 23 was 12,146,000 net tons, an increase of 45,000 tons over the revised figure for the preceding week. This represents the third week in which the output has exceeded 12,000,000 tons and telegraphic reports of loadings on Monday, Tuesday and Wednesday of the following week indicate that complete returns will again pass the 12,000,000 line. Production during the first 252 working days of the year has been 440,462,000 net tons, which is about 43½ million tons behind 1918, but nearly 51 million tons ahead of 1919. The percentage of full time output lost on account of transportation disability during the week ending October 16 is reported as 20.8. A further increase marked the dumping of bituminous coal at Lake Erie ports during the week ended October 23 and the cumulative lake movement from the beginning of the season stood at 18,962,000 net tons, as against 26,472,000 in 1918 and 21,423,000 in 1919. Congestion at Lake Erie ports continues, according to the Geological Survey report, and on October 29 there were on hand awaiting dumping 11,088,000 cars, with an additional 6,016 cars due to arrive within the next 24 hours. The movement to tide also continued in volume during the week ended October 26 and the all rail movement to New England, which had fallen off some time during the second week of October, recovered again in the week ended October 23.

According to the estimates made by the Car Service Division soft coal production again exceeded 12,000,000 tons during the week ended October 30, making the fourth consecutive week during which the output exceeded 12,000,000 tons. Production this week was expected to drop because of the election day holiday.

More coal was transported by the railroads during the week ended October 16 than in any previous week this year, according to reports compiled by the Car Service Division. The total number of cars loaded with coal of all kinds, including railroad fuel as well as commercial coal, was 254,361, an increase of 10 cars over the preceding week and an increase of 6,402 cars or 3 per cent, over the corresponding week of 1919. The loading of bituminous coal was 213,030 cars, an increase of 183 as compared with the previous week, and an increase of 6,073 cars over the corresponding week of 1919. There were also 5,217 cars of lignite and 36,114 cars of anthracite. The anthracite loading was 153 cars greater than for the preceding week but 225 cars less than for 1919.

The cars required for coal loading were 375,994, as compared with 338,435 in the corresponding week of 1919. The cars placed during the week were 306,264, as compared with 289,867 in 1919. The percentage of requirements filled was 81 as compared with 86 in the corresponding week of 1919. The coal loading by districts was as follows:

Districts	Cars loaded 1920	1919
	Bituminous	
Eastern	36,036	36,573
Allegheny	67,164	67,895
Pocahontas	25,823	25,292
Southern	31,410	29,077
Northwestern	9,770	7,698
Central Western	32,265	29,410
Southwestern	10,562	10,912
Grand total, bituminous	213,030	206,957
	Lignite coal	
Northwestern	1,526	1,341
Central Western	3,179	2,915
Southwestern	512	404
Grand total, lignite	5,217	4,660
	Anthracite coal	
Eastern	23,071	24,272
Allegheny	13,043	12,070
Grand total, anthracite	36,114	36,342
	All coal	
Grand total	254,361	247,959

The Car Service Division has issued the following summary of general conditions as of October 29:

Summary of General Conditions

Box cars—Requirements continue heavy. There is additional evidence of increased demand for cars for grain loading. While the offerings have not been as heavy as expected, it has not been possible to supply all cars required, and at some points grain is on the ground awaiting movement. Additional orders have been placed calling for a heavy movement of box cars to western grain-carrying roads in an effort to improve the present situation. The loading of ventilated box cars with dead freight must be confined to points in direct line to home roads, in order to build up supply for heavy fall movement of perishable freight.

Auto cars—There has been a decrease in the demand for automobile cars on account of reduced manufacturing schedules. Such cars should continue to be loaded to auto manufacturing territory. Cars should not be moved empty except when specifically ordered.

Stock cars—Demand heavy for protection of stock loading and for building up supply on Western lines for movement of range cattle and sheep, and efforts must be continued to move cars either to owning lines, or in accordance with specific orders issued for necessary relocation.

Refrigerator cars—There is continued heavy demand for refrigerators in all sections, particularly in eastern, middle western and extreme western territory, and it is necessary that all railroads continue drive to promptly release and move refrigerators to loading territory in accordance with current orders.

Open top cars—The production of bituminous coal should average better than 12,000,000 tons per week for the month of October, which is a very satisfactory increase over preceding months. As a result of Service Orders of the Interstate Commerce Commission supplemented by the special efforts of the individual railroads a substantial improvement has been made in car placements on the greater number of coal loading roads. The movement of coal to upper lake ports is now progressing on a satisfactory basis and it is felt that the fuel stocks in the northwest will have been fully replenished before navigation formally closes. It continues of urgent importance that all roads police existing instructions with respect to the handling of coal carrying equipment, observing in particular the Service Orders of the Interstate Commerce Commission that maximum use of coal cars will be had during this period of emergency.

Flat cars—Demand for this type of equipment continues to exceed the supply in the southeast for lumber and log loading. Flats should be promptly released and moved in accordance with specific orders to the territories as directed.

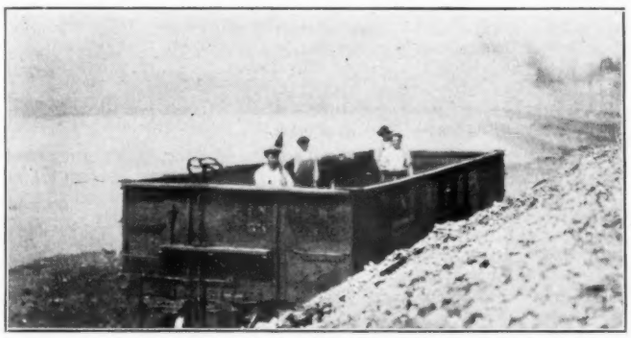
Cars for Grain

In a bulletin to the railroads the Car Service Division says that in view of the shortage of box cars for grain and grain products loading, it is manifest that every effort should be made to conserve cars suitable for that class of loading. Reports occasionally come to the office of good grain cars used for loading fertilizer, hides and other similar freight, thereby making the cars unsuitable for grain, flour and other commodities subject to damage by the odor remaining in the cars. There are so many freight cars suitable only for rough freight that there should be little difficulty in arranging distribution in such a way as to avoid the cause of complaints mentioned above, the bulletin says.

And There Is More to Fill the Bottles When They Are Empty

One Way to Save Cars

THE USE of 50 automatic side-dump, self-clearing cars in ash disposal service on the Delaware, Lackawanna & Western, whereby the cars are loaded by a clam shell bucket and overhead crane and unloaded with a minimum of attendance and no loss of time, is an object lesson in the reduction of car usage. It is estimated that the employment of these 50 dump cars effects a saving of 200 revenue earning cars. In addition to this, it has practically eliminated the labor cost in unloading and having eliminated this element the road is now able to dispose of the ashes with a degree of regularity and dispatch not possible with previous methods. These cars are balanced door dump cars built by the Clark Car Company, Pittsburgh, Pa. The group of three photographs illustrate how these cars are loaded and unloaded with a minimum of labor and with the material dumped at a distance from the rail that clears the track entirely.



How Not to Unload Refuse

In contrast with these methods is that shown in the single photograph where the car is being unloaded laboriously by hand labor. Back of such methods is a tremendous misuse of railway cars which might be considered the prevailing practice at the majority of engine terminals over the country.

The foregoing deals only with ash disposal or waste produced by the railroads in their own operations. This in some sections of the country, at least, is a small amount compared with the total waste material handled, since in industrial sections the railroads handle a large amount of the waste produced by the industries.

Some idea of the cost in labor and car service entailed in the use of ordinary gondolas or bottom dump cars in the wasting of slag, cinders or other refuse will be obtained from a study of the table showing the average wasting cost to roads in the Pittsburgh district for a period of six months ending June 30, 1918. (The cost today with the same methods would show even higher totals than these figures for two years ago, owing to the increased cost of labor at the present time.) Of particular interest are the figures for car detention, which range from 5.6 to 12.2 days, figures which are obviously out of proportion to the service performed.

A further study of this matter will go to show that the principal difficulty has been in the methods of unloading the cars. Many of the railroads have installed car loading facilities, such as locomotive cranes, ditchers, grab buckets, etc., but have not given similar attention to the methods of unloading. The loading of hopper cars and gondolas with waste materials in most cases involves hand unloading. The general effect of this condition is to render it very easy to get these materials into the cars, after which they are subjected to considerable delay until the necessary labor can be gathered to unload them, and there is obviously a great difference between the time necessary to shovel out a car and that required to dump it by the simple turning of an air valve handle.

AVERAGE COSTS OF WASTING SLAG, REFUSE, ETC., FOR THE PERIOD OF SIX MONTHS FROM JANUARY 1 TO JUNE 30, 1918

	Total cars unloaded	Labor and work train service. Unloading cost plus 10 per cent	Average distance hauled	Average car detention days	Average weight per car tons	Car value per day	Transportation cost	Total cost per car	Total cost per ton
P. R. R. East	11,202	$376,938	44.5	10	44	61.4c	3 mills per ton per mile	$45.66	$1.038
P. L.-W.	7,882	298,887	27.2	12.2	46.18	33	3 mills per ton per mile	42.02	.91
Erie	2,644	71,037	31.36	6.42	45.99	24.87	3 mills per ton per mile	32.79	.713
B. & O.	2.731	42,248	80.56	5.96	41.5	54.6	3 mills per ton per mile	29.02	.70
P. & L. E.	12,475	259,798	55.53	5.9	43	74	3 mills per ton per mile	31.76	.74
N. Y. C.	7,231	251,594	70.6	11.08	44.95	*36.62	3 milsl per ton per mile	48.39	1.076
W. & L. E.	2,396	70,705	57	5.6	45	56.27	3 mills per ton per mile	40.35	.89
Total	46,561	$1,371,207	50.6	8.55	44.26	49.4		$40.39	$0.9126

*Estimated.

This matter is one of special importance to the railroads serving the iron and steel centers, owing to the burden placed upon them of disposing of large quantities of slag and other waste produced by the steel industry. For every ton of steel produced, either the steel company or the railroads must dispose of several tons of waste material. It is in connection with this service that the character of the equipment used is of great importance. Railway officers have objected to the use of special equipment in this service because it in-

Loading with a Clam Shell—Dumping in a Few Seconds Time with the Track Clear

volves an empty return haul, but a proper allowance for decreased labor charge, reduction in the number of cars involved and release of other cars for revenue service will show an advantage in the cost of the special equipment in most cases. The average haul for a large proportion of waste material is very short, and aside from the "dollars and cents" consideration, unloading by air pressure is an automatic operation, while it is not possible to unload cars by hand unless labor is available. The idea that increased motive power service is required in the case of the empty return of the dump cars, does not take into consideration the fact that about one-fifth of the number of cars would handle this disposal service, and that this reduction in the number of cars involved would naturally reduce the locomotive movements at terminals.

Another fact to consider in the purchase of special equipment is that its particular applicability to a certain class of service does not preclude the use of cars of the type used on the Lackawanna in regular revenue service, if necessary. While this would be unwarranted under ordinary circumstances, there is nothing about the construction of the car to make them unsuitable for such use and it is not uncommon to use them in this way when they are being shipped to the point of their regular service.

Electrification of the English Railroads

LONDON.

THE ELECTRIFICATION of Railways Advisory Committee appointed by the Minister of Transport in Great Britain for the purpose of inquiring into the electrification of railways has made its first preliminary report. The personnel of this committee has already been published in these columns.

The committee has held 28 meetings and has had before it as witnesses representatives of the various English railways interested in electrification, representatives from various electrical contractors in Great Britain and in addition Ivan Ofverholm, the chief electrical engineer of the Swedish State railways and Col. Huber-Stockar, consulting engineer to the Swiss State railways.

From information obtained from these witnesses and from questionnaires sent out to the chief railway companies, the committee has prepared full statistical tables which have been given detailed consideration. In this first report the committee covers certain general points, the more detailed problems being left over for a subsequent report.

Instructions to the Committee

The instructions to the committee by the Minister of Transport were to consider:

I. Whether any regulations should be made for the purpose of ensuring that the future electrification of railways in this country is carried out to the best advantage in regard to interchange of electric locomotives and rolling stock, uniformity of equipment and other matters.
II. If any such regulations are desirable, what matters should be dealt with, and what regulations should be made.
III. How far it is desirable, if at all, that railways or sections of railways already electrified should be altered so that they may form parts of a unified system.

The Recommendations Made

In respect to item I, the committee considers it is desirable that certain general regulations should be made for observance by the railways when electrifying their lines, insuring standardization of those methods and appliances which are likely to prove the most satisfactory under British conditions. At the same time, such regulations should put no avoidable difficulties in the way of the adoption in future of any improvements in methods or appliances which may from time to time become available with increasing knowledge and experience.

In respect to item II, the committee recommends that regulations should be issued in accordance with the following conditions:

(1) That in the case of those railways which have not as yet electrified any lines, as well as those which at present have electrified all or part of their lines on a direct current system, their electrification, or extended electrification as the case may be, should be carried out on the direct current system.

(2) That the standard pressure of the direct current system at the sub-station busbars shall be 1,500 volts, subject to—

(a) The continuance of any existing 600 volt and 1 or 1,200 volt installations.

(b) The adoption of half the standard voltages—750 volts—in those cases where it can be shown that advantage would arise from the use of this lower pressure.

(c) The adoption of higher pressures—limited to a multiple of the standard pressure—where it can be shown that sufficient advantage would accrue.

(3) That both overhead and rail conductor collection should be permitted, as long as the position and general design of the conductors and structures are in accordance with recommendations which will be made in a subsequent report.

(4) That the generation of current for direct current lines should be alternating three-phase at such voltage as may be desirable in each case.

(5) That in the case of existing generating stations supplying at any frequency between 25 and 50 cycles it is unnecessary to make any change in frequency, but that it is desirable that where any one such frequency is in general use in a particular electricity district, any new power station put down in that district for supplying a railway should adopt the frequency which has been approved by the electricity commissioners or is in general use in that district.

In respect to item III, the only line of any importance in Great Britain which would not come under the terms of the committee's recommendations outlined above, is the London, Brighton & South Coast. This road has adopted a single phase alternating current system for its suburban lines and did so with a special view to the adoption of a system which at that time appeared the only one admitting of extensions from London to Brighton when this extension became feasible. In this particular case the committee had to consider that with the present system on the Brighton a change of locomotives or multiple-unit equipment would be required in case other railway companies were to run trains over that line. On the other hand a large financial expenditure would be required to change the existing suburban system of the Brighton to a direct current system. The committee therefore decided that the Brighton system as at present in use or actually under consideration need not be changed and is one special consideration.

Photo by International

Senator Harding at Terre Haute, Indiana, a Few Days Before He Became President-Elect, Telling the Train Crew How He Enjoyed His Twenty Mile Ride in the Engine Cab

General News Department

Aerial mail service between the United States and Cuba is now a regular thing, two seaplanes having started from Key West for Havana on November 1. Each of the planes to be used in the service has a capacity of 1000 lb. of mail and twelve passengers. On the initial trip the planes carried a full list of passengers and a large amount of mail.

The American Rolling Mill Company, Middletown, Ohio, has reproduced in motion pictures the manufacture of open-hearth iron. The film shows the entire process of making Armco iron from the arrival of the ore at the blast furnace to the final inspection of the finished product. It is stated that this is the first time that the incandescent mass of molten metal in an open-hearth furnace has been shown in detail in motion pictures.

The Committee of Direction of the Telephone and Telegraph Division of the American Railroad Association, at a meeting in Chicago on October 28, appointed R. F. Finley, superintendent of telegraph of the New York Central, second vice-chairman, succeeding E. L. King, superintendent of telegraph of the Southern Pacific, who had resigned on account of his appointment as superintendent of transportation of the Salt Lake division of the Southern Pacific.

The Nashville, Chattanooga & St. Louis announces that the freight claim prevention bureau, heretofore a branch of the legal department, has been transferred to the operating department and merged with the safety department, these combined branches of the service to be known as the Safety & Freight Claim Prevention Bureau, with F. Whittemore, superintendent; office, Nashville, Tenn. Inspectors are to be employed to inspect the loading and stacking of freight at depots, the handling of cars at terminals and on line of road and the condition of freight at junction points and destinations; also to report all instances of improper handling of freight or of cars.

Correction

Through an error the address of the Eymon Crossing Company in the article entitled "Recent Improvements on the Eymon Crossing" in the *Railway Age* of October 15 (page 667), was given as Marion, Ind. The correct address of this company is Marion, Ohio.

Central Railway Club

The thirty-first annual dinner of the Central Railway Club will be held on Thursday evening, November 11, at 7 o'clock at the Hotel Iroquois, Buffalo, N. Y. The regular business meeting will be held at 2 p. m. E. R. Webb, master mechanic of the Michigan Central at St. Thomas, Ont., will present a paper on Enginehouse Organization, and action will be taken to change the day of meetings from the second Friday of each month to the second Thursday. The arrangements for the evening will provide for dancing and other entertainment between the dinner courses.

Strike of Shopmen at Houston

At the shops of the Southern Pacific in Houston, Tex., about 900 employees walked out on October 13, because of resentment occasioned by the reinstatement, by a foreman, of four negro employees who had been dismissed without proper investigation of complaints which had led to their removal. The union leaders declared the walkout unwarranted and in direct violation of the constitutions of the several crafts, and of the national agreement. Following unsuccessful negotiations the road made an offer to take back the men, which was not accepted; but, after waiting several days, notice was finally given that the strikers would be taken back at any time before October 28 at 1 p. m. By Monday, November 1, the majority of the strikers had returned to work as new employees; but considerable numbers had been refused employment, because of being agitators or for other reasons, and the outsiders were trying to keep up the agitation.

New England Railroad Club

The next regular dinner and meeting of the New England Railroad Club will be held at the American House, Boston, Mass., on Tuesday evening, November 9, 1920. The subject of the paper to be presented will be "The Locomotive Terminal as an Operating Factor," by L. G. Plant, associate editor of the *Railway Age*. Dinner will be served at 6:30 p. m., and reservations must be made in advance. The business session will start at eight o'clock.

Extensive Embezzlement by Express Employees

In the United States District Court, at Macon, Ga., on October 28, the grand jury returned indictments against 64 express messengers, express agents, railroad conductors and other persons, on charges connected with costly losses of freight. The complaints were made by the American Railway Express Company, which during six months has lost in southern states over $1,000,000 by thefts. An organized conspiracy was charged. Most of the accused were employed on the Central of Georgia between Macon and Montgomery.

American Railway Association

The regular session of this association will be held at the Blackstone, Chicago, on Wednesday, November 17. Eleven reports are to be presented at this session, as follows: Division I—Operating (Telegraph and Telephone Section); Division II—Transportation; Division III—Traffic; Division IV—Engineering—(a) Construction and Maintenance Section; (b) Electrical Section; (c) Signal Section; Division V—Mechanical; Division VI—Purchases and Stores; Division VII—Freight Claims; Division VIII—Perishable Freight; and from the conference committee on grain.

American Railway Development Association Meeting

The semi-annual meeting of the American Railway Development Association, the membership of which is composed of railroad industrial agricultural, immigration, publicity, real estate and marketing representatives, will be held at the Hotel LaSalle, Chicago, on November 11 and 12. The purpose of this association is to study and determine the best methods of developing the territories covered by the member lines and the inherent possibilities of their respective regions, create new traffic through the locating of new industries, promote the settlement of unoccupied lands, improve agricultural conditions, aid farmers in marketing their products and stimulate conditions generally.

The two-day meeting will be confined largely to round table discussions of the various business problems involved—the first place on the docket being reserved for the question of standardizing the developing work of the individual lines with a view to the elimination of waste, duplication and competitive practices, to increasing the efficiency of the work, and to broadening its possibilities.

The B. L. E. National Bank

The Comptroller of the Currency announces the issuance of a charter for the Brotherhood of Locomotive Engineers' Co-operative National Bank, Cleveland, Ohio; capital, $1,000,000. Warren S. Stone, grand chief of the Brotherhood of Locomotive Engineers, is president, W. B. Prenter, vice-president and cashier, and W. F. Caleb, vice-president and manager.

Mr. Stone says that this is the first labor bank. "We made the bank co-operative by distributing the stock to as many mem-

bers as possible. We have limited stock dividends to 10 per cent. We expect to pay four per cent on time deposits, and if there are excess earnings we expect to share them with our depositors who co-operate with us in making the bank successful. We have 85,000 members, but the bank, of course, is open to everybody and is not an exclusive labor bank. The stock was over-subscribed. For 50 years the brotherhood has carried on several kinds of life, accident and pension insurance. We have paid out many millions annually through the banks of Cleveland. We have paid out in charities alone more than $3,000,000 and not a single member of the brotherhood is a public charge. The total insurance on our books amounts to $184,000,000, and since 1868 we have paid out claims of $45,291,264. There are 55,000 co-operative banks in Europe, many of them small, and they have rarely lost a cent."

Temporarily the bank will be located at St. Clair avenue and Ontario street, in a building bought last June.

Society of Railway Financial Officers

The Society of Railway Financial Officers will hold its annual meeting at the Jefferson Hotel, Richmond, Va., on November 10 to 12. The meeting will begin at 11 a. m., November 10, and it is expected will be addressed by the Mayor of Richmond and the Governor of Virginia. At the afternoon session there will be an address by John M. Miller, president of the First National Bank of Richmond, and papers will be read by T. H. B. McKnight, treasurer of the Pennsylvania, on "Personality in Business," and by John T. Reid, treasurer of the Atlantic Coast Line, on "Settlement of Claim for Order Notify Shipments Delivered Without Surrender of Bill of Lading."

At the meeting of Thursday morning, November 11, there will be an address by John Kerr Branch, president of the Richmond Chamber of Commerce, and papers will be presented by F. H. Hamilton, treasurer of the St. Louis-San Francisco on "Practices under General Order No. 30," and by T. W. Mathews, assistant treasurer of the Seaboard Air Line, on "Preparation of Checks and Payment of Wages by Divisional Paymaster." In the afternoon there will be papers by A. B. Jones, local treasurer of the Chicago & North Western, on "Remittances of Agents and Conductors," by James A. Yates, assistant treasurer of the Grand Trunk, on "Railways of Canada," and by Carl Nyquist, secretary and treasurer of the Chicago, Rock Island & Pacific, on "All Passes, Art Alone Endures."

In the evening the annual banquet will be held.

The society will hold its closing meeting on Friday, November 12, when E. C. Mann, treasurer of the Lehigh Valley, will present a paper on "Selling Stock of the Company to Employees on Instalment Payment Plan," and the election of officers will be held.

September Earnings Insufficient

Railroad earnings for September failed to show the full effect of the increases in rates which were made on August 26, according to the returns of a majority of the large roads that have thus far been filed with the Interstate Commerce Commission. A total of 160 roads, operating 171,000 miles, show an increase in total operating revenues, as compared with September, 1919, of only about 25 per cent, whereas freight rates were increased an average of nearly 35 per cent and passenger rates 20 per cent. This is attributed largely to the fact that a large amount of traffic was handled in September that had started at the old rates, and also to the fact that many states have not allowed the full increases on intrastate traffic.

Operating expenses increased over 28 per cent and the net operating income for the 160 roads shows an increase of only 4.1 per cent over that of September, 1919. The net operating income for the Class I roads in September of last year was $77,763,000, and applying the percentage of increase shown for the 160 roads to this would give an estimate of about $81,000,000 for this September, which is about $28,000,000 short of what the roads should earn in September to make a net return of 6 per cent for the year. September should produce about 10 per cent of the year's net operating income, and on that basis the net operating income should be about $109,000,000. The eastern roads that have reported show an increase in operating revenues of about 30 per cent, an increase in expenses of about 34 per cent and an increase in net operating income of 2.4 per cent. The western roads' revenues increased 18 per cent, expenses 24 per cent and net decreased 8 per cent. The southern roads show an increase in revenues of 24 per cent, in expenses of only 22 per cent and in net of 78 per cent.

I. C. C. to Investigate Graft Charges

The Interstate Commerce Commission has taken cognizance of various charges which have appeared in newspaper interviews of a widespread system of "grafting" among coal car distributors and other railroad officers and employees, by announcing a proceeding of investigation "in the matter of the distribution of cars for shipments of coal in interstate and foreign commerce." It is understood that the investigation has particular reference to some general charges made through the newspapers by Gibbs L. Baker, a Washington attorney representing coal operators, and that the investigation may offer an opportunity for testimony under oath. The commission's order is as follows:

"The commission having under consideration the subject matter covered by the above title, and having received information from various sources that statements have been made, which, if true, tend to show that the law has been violated in certain ways, namely: That certain persons, firms and corporations have effered, granted and given money and other things of value to common carriers and their agents, and to others, for the purpose of obtaining, and that said persons, firms and corporations have obtained, unjust discriminations in their favor, and undue and unreasonable preferences and advantages, from said common carriers and their agents, and from others, in connection with the distribution of cars for use, and which have been used, in making shipments of coal in interstate and foreign commerce; that by reason of the premises, certain other persons, firms and corporations have been unjustly discriminated against and subjected to undue prejudices and disadvantages, and that the aforesaid common carriers and their agents, and others, have solicited, accepted and received money and other things of value for the purpose and with the effect above set forth.

"It is ordered, That a proceeding of inquiry and investigation be, and the same is hereby, instituted into and concerning the several matters and things above mentioned and described, in order that the commission may keep itself informed and that it may hereafter take such action concerning said matters and things as it may determine upon and consider necessary, proper, or appropriate.

"It is further ordered, That this proceeding be set for hearing at such times and places, and that such persons be required to appear and testify or to produce books, documents and papers as the commission may hereafter direct; and that the investigation be carried on in the meantime by such other means and methods as may be deemed appropriate, and,

"It is further ordered, That a copy of this order be served upon such common carriers and others as the commission may hereafter designate."

Government Loss Under Guaranty $659,000,000

The Interstate Commerce Commission's monthly summary of railway earnings and expenses for August and the first eight months of this year indicates that the government has sustained a loss on account of its guaranty to the railroads for the six months ending August 31 of approximately $659,000,000, without any allowance for the readjustment of maintenance expense. For the eight months, the large roads show a net deficit of approximately $155,000,000 and as the government had a net operating income for the first two months of the year of about $51,000,000 (of which about $50,000,000 was back mail pay), the operating deficit for the six months' period was $206,000,000. The 39 roads which did not accept the guaranty earned about $32,000,000, or practically the amount of their guaranty, which does not go into the government's accounts, so the deficit it had to make up would be about $238,000,000. The standard return for the large roads which accepted the guaranty was about $842,000,000, and for six months this would be $421,000,000, making the total which the government is to make good about $659,000,000. Of this $234,000,000 has been advanced and the balance is held up pending final settlement of the accounts with the Interstate Commerce

Commission under the recent decision of the comptroller of the treasury.

For the month of August, 187 Class I roads and 15 switching and terminal companies show an operating deficit of $155,000,000, of which $79,000,000 represents back wages under the decision of the Railroad Labor Board. Approximately $40,000,000 of back wages was charged into the July accounts and approximately $25,000,000 into the June accounts, making a total of $144,000,000. As the estimated back pay for the four months from May 1 to September 1 is about $200,000,000, this indicates that the September accounts will also include an item of this kind which will be added to the amount of the government's loss. The commission's summary for August and eight months is as follows:

Item	July Amount		Eight Months Amount	
	1920	1919	1920	1919
1—Average number of miles operated..	235,546.78	234,232.68	235,045.91	234,064.96
REVENUES:	Dollars	Dollars	Dollars	Dollars
2—Freight	368,985,467	313,839,603	2,582,905,855	2,233,721,976
3—Passenger	133,005,132	120,689,954	823,138,212	778,025,855
4—Mail	7,705,900	4,676,053	116,749,004	34,637,729
5—Express	15,144,055	9,978,809	103,924,176	70,434,006
6—All other transportation	14,454,521	11,354,690	95,808,827	80,772,644
7—Incidental	14,880,086	10,732,321	96,763,399	82,501,276
8—Joint facility—Cr.	859,014	623,543	4,998,887	4,458,916
9—Joint facility—Dr.	248,303	180,598	1,459,697	1,386,379
10—Railway operating revenues	554,785,872	471,714,375	3,822,828,663	3,283,165,723
EXPENSES:				
11—Maint. of way and structures	139,876,887	68,202,955	690,819,006	506,071,444
12—Maint. of equipm't	179,967,569	92,202,302	1,028,676,962	761,750,024
13—Traffic	8,064,511	4,012,487	46,023,065	30,765,249
14—Transportation ...	326,054,339	180,501,967	1,851,417,383	1,400,560,402
15—Miscel. operations	6,460,950	4,336,779	40,497,998	30,898,336
16—General	19,233,375	10,389,131	109,227,211	82,188,370
17—Transp. for investment—Cr.	928,949	496,097	3,083,778	4,051,733
18—Railway operating expenses	678,728,882	359,149,584	3,763,577,847	2,808,182,092
19—Net rev. from railway operations..d	123,942,810	112,564,791	59,250,816	474,983,631
20—Ry. tax accruals..	25,525,656	16,359,990	180,969,894	124,566,916
21—Uncollectible railway revenues...	129,436	72,945	719,025	492,734
22—Railway operating income .....d	149,597,902	96,131,855	d 122,438,103	349,923,981
23—Equipment rents (Dr. balance)...	3,638,968	2,222,298	19,457,552	13,738,996
24—Joint facility rent (Dr. balance)...	1,990,747	1,400,842	12,915,119	9,732,914
25—Net of items 22, 23 and 24.....d	155,227,617	92,508,715	d 154,810,774	326,452,071
26—Ratio of op., exp. to op. rev., per cent.	122.34	76.14	98.45	85.53

Note—(a) Federal lap-over items settled during the month are included in the above compilations for those roads that have indicated that estimates were not included for substantially all unaudited corporate items.

(b) To compare the earning power of roads in 1920 and 1919, it should be noted (1) that corporate war taxes and organization expenses are not included in the 1919 returns; (2) that the revenues of all roads for eight months of 1920 include approximately $50,000,000 back mail pay; (3) that, in some cases, back pay representing increased wage accruals, resulting from decision No. 2, by the United States Railroad Labor Board, retroactive to May 1, were charged to August expenses. The amounts of estimated increased wage accruals charged into August expenses, so far as reported are: Eastern District, $31,901,121; Pocahontas District, $926,347; Southern District, $5,510,850; Western District, $40,939,279; United States, $79,277,597. The amount of war taxes included in August, 1920, is $3,794,161, and for period, March to August, 1920, $20,224,409.

(c) Green Bay & Western R. R. Co. report not received.

(d) Debit.

Meetings and Conventions

The following list gives names of secretaries, dates of next or regular meetings and places of meetings:

AIR BRAKE ASSOCIATION.—F. M. Nellis, Room 3014, 163 Broadway, New York City. Exhibit by Air Brake Appliance Association.

AIR BRAKE APPLIANCE ASSOCIATION.—Fred W. Venton, 836 So. Michigan Ave., Chicago. Meeting with Air Brake Association.

AMERICAN ASSOCIATION OF DEMURRAGE OFFICERS.—F. A. Pontious, Supervisor of Demurrage and Storage, C. & N. W. Ry., Chicago.

AMERICAN ASSOCIATION OF DINING CAR SUPERINTENDENTS.—S. W. Derr, Philadelphia & Reading, Philadelphia, Pa.

AMERICAN ASSOCIATION OF FREIGHT AGENTS.—R. O. Wells, Illinois Central, Chicago. Next meeting June 20, 1921.

AMERICAN ASSOCIATION OF GENERAL BAGGAGE AGENTS.—E. L. Duncan, C. & E. I. R. R., 332 South Michigan Ave., Chicago. Next meeting, November 16-18, 1920, St. Louis, Mo.

AMERICAN ASSOCIATION OF PASSENGER TRAFFIC OFFICERS.—W. C. Hope, C. R. R. of N. J., 143 Liberty St., New York.

AMERICAN ASSOCIATION OF RAILROAD SUPERINTENDENTS.—J. Rothschild, Room 400, Union Station, St. Louis, Mo. Next convention, August 24-26, 1921, Kansas City, Mo.

AMERICAN ELECTRIC RAILWAY ASSOCIATION.—E. B. Burritt, 8 W. 40th St., New York. Exhibit by American Electric Railway Manufacturers' Association.

AMERICAN ELECTRIC RAILWAY MANUFACTURERS' ASSOCIATION.—C. F. J. Dell, 50 E. 42nd St., New York. Meeting with American Electric Railway Association.

AMERICAN RAILROAD MASTER TINNERS', COPPERSMITHS' AND PIPE FITTERS' ASSOCATION.—Otto E. Schlinck, 185 W. 5th St., Peru, Ind.

AMERICAN RAILWAY ASSOCIATION.—J. E. Fairbanks, 75 Church St., New York. Next regular meeting November 17, 1920, Chicago.

Division 1, Operating (including former activities of Association of Railway Telegraph Superintendents).—W. J. Fripp (chairman), General Manager, N. Y. C. R. R., New York, N. Y.

Telegraph and Telephone Division.—H. Hulatt (chairman), Manager of Telegraphs, Grand Trunk. Exhibit by Railway Telegraph and Telephone Appliance Association.

Division 2, Transportation (including former activities of Association of Transportation and Car Accounting Officers).—E. J. Pearson (chairman), President, N. Y., N. H. & H. R. R., New Haven, Conn.

Division 3, Traffic.—Robert C. Wright (chairman), General Traffic Manager, P. R. R., Philadelphia, Pa.

Division 4, Engineering.—E. H. Fritch, 431 South Dearborn St., Chicago. Next annual meeting, March 15-17, 1921, Chicago.

Construction and Maintenance Section.—E. H. Fritch, secretary.

Electrical Section.—George Gibbs (chairman), Chief Engineer of Electric Traction, Long Island Railroad, New York, N. Y.

Signal Section.—H. S. Balliet, 75 Church St., New York. Exhibit by Signal Appliance Association.

Division 5, Mechanical (including former activities of Master Car Builders' and Master Mechanics' Association).—V. R. Hawthorne, 431 South Dearborn St., Chicago. Next convention June 15-22. Atlantic City, N. J. Exhibit by Railway Supply Manufacturers' Association.

Equipment Painting Section.—V. R. Hawthorne, secretary.

Division 6, Purchases and Stores (including former activities of Railway Storekeepers' Association).—J. P. Murphy, General Storekeeper, N. Y. C. R. R., Collinwood, Ohio.

Division 7, Freight Claims (including former activities of the Freight Claim Association).—Lewis Pilcher, 431 South Dearborn St., Chicago. Next meeting November 17, 1920.

Division 8, Perishable Freight.—E. F. McPike (chairman), 431 South Dearborn St., Chicago.

AMERICAN RAILWAY BRIDGE AND BUILDING ASSOCIATION.—C. A. Lichty, C. & N. W. Ry., 319 N. Waller Ave., Austin Station, Chicago. Exhibit by Bridge and Building Supply Men's Association.

AMERICAN RAILWAY ENGINEERING ASSOCIATION.—(Works in co-operation with the American Railroad Association, Section II.) E. H. Fritch, 431 South Dearborn St., Chicago. Exhibit by National Railway Appliances Association.

AMERICAN RAILWAY MASTER MECHANICS' ASSOCIATION.—(See American Railroad Association, Section III, Mechanical.)

AMERICAN RAILWAY PERISHABLE FREIGHT ASSOCIATION.—E. F. McPike, 135 E. 11th Place, Chicago. Regular meetings, 2nd Wednesday in March and September.

AMERICAN RAILWAY TOOL FOREMEN'S ASSOCIATION.—R. D. Fletcher, 1145 East Marquette Road, Chicago. Exhibit by Supply Association of the American Railway Tool Foremen's Association.

AMERICAN SHORT LINE RAILROAD ASSOCIATION.—T. F. Whittelsey, Union Trust Bldg., Washington, D. C.

AMERICAN SOCIETY FOR TESTING MATERIALS.—C. L. Warwick, University of Pennsylvania, Philadelphia, Pa.

AMERICAN SOCIETY OF CIVIL ENGINEERS.—Col. H. S. Crocker (acting secretary), Engineering Societies Building, 33 W. 39th St., New York. Annual convention, August 10-12, Multnomah Hotel, Portland, Oregon. Regular meetings, 1st and 3d Wednesday in month, except July and August, 33 W. 39th St., New York.

AMERICAN SOCIETY OF MECHANICAL ENGINEERS.—Calvin W. Rice, 29 W. 39th St., New York.

AMERICAN STEEL TREATERS' SOCIETY.—W. H. Eisenman, 154 East Erie St., Chicago.

AMERICAN TRAIN DESPATCHERS' ASSOCIATION.—C. L. Darling, Northern Pacific Ry., Spokane, Wash. Next convention, June 20, 1921, Kansas City, Mo.

AMERICAN WOOD PRESERVERS' ASSOCIATION.—F. J. Angier, B. & O., Mt. Royal Sta., Baltimore, Md. Next annual meeting, January 25-27, 1921, San Francisco.

ASSOCIATION OF RAILWAY CLAIM AGENTS.—Willis H. Failing, C. R. R. of N. J., Jersey City, N. J. Next meeting at St. Louis, Mo.

ASSOCIATION OF RAILWAY ELECTRICAL ENGINEERS.—Jos. A. Andreucetti, C. & N. W., Room 411, C. & N. W. Sta., Chicago. Exhibit by Railway Electric Supply Manufacturers' Association.

ASSOCIATION OF RAILWAY EXECUTIVES.—Thomas De Witt Cuyler (chairman), 61 Broadway, New York, N. Y.

ASSOCIATION OF RAILWAY SUPPLY MEN.—C. L. Mellor, 212 W. Illinois St., Chicago. Meeting with International Railway General Foremen's Association.

ASSOCIATION OF RAILWAY TELEGRAPH SUPERINTENDENTS.—(See American Railroad Association, Section I, Operating.)

ASSOCIATION OF TRANSPORTATION AND CAR ACCOUNTING OFFICERS.—(See American Railroad Association, Section V. Transportation.)

BRIDGE AND BUILDING SUPPLY MEN'S ASSOCIATION.—A. J. Filkins, Paul Dickinson Company, Chicago. Meeting with convention of American Railway Bridge and Building Association.

CANADIAN RAILWAY CLUB.—W. A. Booth, 131 Charron St., Montreal, Que.

CAR FOREMEN'S ASSOCIATION OF CHICAGO.—Aaron Kline, 626 North Pine Ave., Chicago. Regular meetings, 2d Monday in month, except June, July and August, New Morrison Hotel, Chicago.

CAR FOREMEN'S ASSOCIATION OF ST. LOUIS.—Thomas B. Koeneke, Federal Reserve Bank Bldg., St. Louis, Mo. Meetings first Tuesday in month at the American Hotel Annex, St. Louis.

CENTRAL RAILWAY CLUB.—Harry D. Vought, 95 Liberty St., New York. Regular meetings, 2d Thursday in November and 2d Friday in January, March, May and September, Hotel Statler, Buffalo, N. Y.

CHIEF INTERCHANGE CAR INSPECTORS' AND CAR FOREMEN'S ASSOCIATION.—J. C. Keene, General Car Inspector, Wabash R. R., Decatur, Ill.

CHIEF INTERCHANGE CAR INSPECTORS' AND CAR FOREMEN'S SUPPLY MEN'S ASSOCIATION.—W. R. Elliott, Terminal R. R. Ass'n. of St. L., St. Louis, Mo.

CINCINNATI RAILWAY CLUB.—H. Boutet, 101 Carew Bldg., Cincinnati, Ohio.

EASTERN RAILROAD ASSOCIATION.—D. G. Stuart, Washington, D. C.

FREIGHT CLAIM ASSOCIATION.—(See American Railroad Association, Section VII, Freight Claims.)

GENERAL SUPERINTENDENTS' ASSOCIATION OF CHICAGO.—A. M. Hunter, 321 Grand Central Sta., Chicago. Regular meetings, Wednesday preceding 3d Friday in month, Room 856, Insurance Exchange Bldg., Chicago.

INTERNATIONAL RAILROAD MASTER BLACKSMITHS' ASSOCIATION.—W. J. Mayer, Michigan Central R. R., Detroit, Mich.

INTERNATIONAL RAILWAY FUEL ASSOCIATION.—J. G. Crawford, 702 E. 51st St., Chicago. Next annual meeting, May, 1921, Hotel Sherman, Chicago.

INTERNATIONAL RAILWAY GENERAL FOREMEN'S ASSOCIATION.—Wm. Hall, 1061 W. Wabash Ave., Winona, Minn. Exhibit by Association of Railway Supply Men.

MAINTENANCE OF WAY MASTER PAINTERS' ASSOCIATION.—E. E. Martin, Union Pacific R. R., Room No. 19, Union Pacific Bldg., Kansas City, Mo. Next convention October 4-6, 1921, Buffalo, N. Y.

MASTER BOILER MAKERS' ASSOCIATION.—Harry D. Vought, 95 Liberty St., New York.

MASTER CAR AND LOCOMOTIVE PAINTERS' ASSOCIATION OF THE UNITED STATES AND CANADA.—(See American Railroad Association, Section III, Equipment Painting Division.)

MASTER CAR BUILDERS' ASSOCIATION.—(See American Railroad Association, Section III, Mechanical.)

NATIONAL ASSOCIATION OF RAILROAD TIE PRODUCERS.—E. E. Pershall, T. J. Moss Tie Company, 720 Security Bldg., St. Louis, Mo. Next annual convention, January 27-28, 1921, San Francisco.

NATIONAL ASSOCIATION OF RAILWAY AND UTILITIES COMMISSIONERS.—James B. Walker, 49 Lafayette St., New York. Next convention, November 9-12, 1920. Washington, D. C.

NATIONAL FOREIGN TRADE COUNCIL.—O. K. Davis, 1 Hanover Square, New York

NATIONAL RAILWAY APPLIANCES ASSOCIATION.—C. W. Kelly, Kelly-Derby Co., Peoples Gas Bldg., Chicago. Meeting with American Railway Engineering Association.

NEW ENGLAND RAILROAD CLUB.—W. E. Cade, Jr., 683 Atlantic Ave., Boston, Mass. Regular meetings, 2d Tuesday in month, excepting months of June, July, August and September.

NEW YORK RAILROAD CLUB.—Harry D. Vought, 95 Liberty St., New York. Regular meeting, 3d Friday in month, except June, July and August, 29 W. 39th St., New York.

PACIFIC RAILWAY CLUB.—W. S. Wollner, 64 Pine St., San Francisco, Cal. Regular meeting 2d Thursday in month, alternately in San Francisco and Oakland.

RAILWAY ACCOUNTING OFFICERS' ASSOCIATION.—E. R. Woodson, 1116 Woodward Bldg., Washington, D. C. Next annual meeting, May 11, 1921, Atlantic City, N. J.

RAILWAY BUSINESS ASSOCIATION.—Frank W. Noxon, 600 Liberty Bldg., Broad and Chestnut Sts., Philadelphia, Pa.

RAILWAY CLUB OF PITTSBURGH.—J. D. Conway, 515 Grandview Ave., Pittsburgh, Pa. Regular meetings, 4th Thursday in month, except June, July and August, Americus Club House, Pittsburgh, Pa.

RAILWAY DEVELOPMENT ASSOCIATION.—D. C. Welty, Missouri Pacific R. R., Little Rock, Ark.

RAILWAY ELECTRICAL SUPPLY MANUFACTURERS' ASSOCIATION.—J. Scribner, General Electric Co., Chicago. Annual meeting with Association of Railway Electrical Engineers.

RAILWAY EQUIPMENT MANUFACTURERS' ASSOCIATION.—D. L. Eubank, Galena Signal Oil Company, Richmond, Va. Meeting with Traveling Engineers' Association.

RAILWAY FIRE PROTECTION ASSOCIATION.—R. R. Hackett, Baltimore & Ohio R. R., Baltimore, Md.

RAILWAY REAL ESTATE ASSOCIATION.—R. H. Morrison, C. & O. Ry., Richmond, Va.

RAILWAY SIGNAL ASSOCIATION.—(See American Railroad Association, Section II, Signal Division.)

RAILWAY STOREKEEPERS' ASSOCIATION.—(See American Railroad Association, Section VI, Purchases and Stores.)

RAILWAY SUPPLY MANUFACTURERS' ASSOCIATION.—J. D. Conway, 1841 Oliver Bldg., Pittsburgh, Pa. Meeting with American Railroad Association, Section III, Mechanical.

RAILWAY TELEGRAPH AND TELEPHONE APPLIANCE ASSOCIATION.—G. A. Nelson, Waterbury Battery Co., 30 Church St., New York.

ROADMASTERS' AND MAINTENANCE OF WAY ASSOCIATION.—P. J. McAndrews, C. & N. W. Ry., Sterling, Ill. Next annual convention, September 20-22, 1921, Chicago. Exhibit by Track Supply Association.

ST. LOUIS RAILWAY CLUB.—B. W. Frauenthal, Union Station, St. Louis, Mo. Regular meetings, 2d Friday in month, except June, July and August.

SIGNAL APPLIANCE ASSOCIATION.—F. W. Edmunds, Schroeder Headlight & Generator Co., New York City. Meeting with American Railroad Association, Signal Division.

SOCIETY OF RAILWAY FINANCIAL OFFICERS.—L. W. Cox, 1217 Commercial Trust Bldg., Philadelphia, Pa.

SOUTHERN AND SOUTHWESTERN RAILWAY CLUB.—A. J. Merrill, P. O. Box 1205, Atlanta, Ga. Regular meetings, 3d Thursday in January, March, May, July, September and November, Piedmont Hotel, Atlanta.

SOUTHERN ASSOCIATION OF CAR SERVICE OFFICERS.—E. W. Sandwich, Western Ry. of Ala., Atlanta, Ga.

SUPPLY ASSOCIATION OF AMERICAN RAILWAY TOOL FOREMEN'S ASSOCIATION.—C. N. Thulin, Duff Manufacturing Company, 935 Peoples Gas Bldg., Chicago.

TRACK SUPPLY ASSOCIATION.—W. C. Kidd, Ramapo Iron Works, Hillburn, N. Y. Meets with Roadmasters' and Maintenance of Way Association.

TRAVELING ENGINEERS' ASSOCIATION.—W. O. Thompson, N. Y. C. R. R., Cleveland, O. Exhibit by Railway Equipment Manufacturers' Association.

WESTERN ASSOCIATION OF SHORT LINE RAILROADS.—Clarence M. Oddie, Mills Bldg., San Francisco.

WESTERN RAILWAY CLUB.—J. M. Byrne, 916 W. 78th St., Chicago. Regular meetings, 3d Monday in month, except June, July and August.

Traffic News

The Interstate Commerce Commission has issued a summary of traffic statistics from reports of large steam roads for the month of July and seven months ending July, 1920. The revenue ton miles for July aggregated 36,941,917,000, an increase of over 4,000,000,000 as compared with July, 1919. The revenue passenger miles totalled 4,785,323,000, an increase of over 250,000,000.

Fuel Conservation Campaign on the Reading

Special efforts are being made by the Philadelphia & Reading through a fuel conservation campaign to reduce the amount of coal used on the system. Printed leaflets, issued by C. P. Dampman, supervisor of fuel conservation, have been issued for distribution to the employees. These cover such matters as the reduction of coal lost in transit, proper inspection of locomotives for mechanical defects, quick movements in and out of the yards and maximum tonnage over ruling grades. Special committees to take charge of the fuel conservation campaign have been appointed on the different divisions.

Packers Protest Increased Demurrage Rates

A number of shippers headed by the Institute of American Meat Packers have entered protests with the Interstate Commerce Commission against the increased demurrage rates which the carriers have filed to become effective on December 1. The packers assert that shippers have been bearing more than their share of readjustment costs without corresponding reciprocity from the carriers in the way of improved service; that detention figures quoted by the carriers are based on antiquated statistics; that subnormal and crippled yard service with bunched deliveries will account for much of the detention; that no emergency necessitates even the temporary application of the proposed rates; and that the public generally would have to bear the expense of delays over which they have no control and which are brought about by the carriers themselves.

New Traffic Statistics

The Interstate Commerce Commission's Bureau of Statistics has compiled an elaborate statement showing the tonnage, number of carloads, freight revenue, and way-bill origin and destination by states for 15 selected commodities for Class I steam railroads for the month of April, 1920.

The tables included are the result of compiling the reports required by paragraph 2 of the order of the Interstate Commerce Commission of December 1, 1919, regarding freight commodity statistics. The first part of this order provides for quarterly reports of the number of carloads and number of tons for each of 70 classes of commodities, the reports of this nature previously required being on an annual basis with but 38 classes. The second part of the order required as a special study for the month of April, 1920, additional data for 15 selected classes. The switchmen's strike in that month renders the data somewhat less representative than they otherwise would be, but the main purpose of the study was to indicate the kind of information which would have resulted from the plan of commodity statistics embodied in General Order 59 of February 26, 1919, issued by the director general of railroads. This order was soon afterwards rescinded by the director general and no summaries were ever issued under it.

The need for the compilation of freight revenue by commodity classes has frequently been felt in connection with rate revisions. It is said in favor of the plan that it gives a survey of the commerce on railroads and permits of an approximation of the revenue per ton-mile on the various state to state movements. Whether the advantages are sufficiently great to warrant the adoption of this plan for regular monthly or quarterly reports, the Bureau of Statistics says, is an open

question. Since some traffic is rebilled, certain tons are reported twice in the tables, but in any particular state to state movement the tonnage and revenue shown are comparable.

Commission Authorizes Restoration of Per Diem Rates for Short Lines

The Interstate Commerce Commission, in a report by Division 4, on October 28 authorized the trunk line railroads to accord to the short lines during the period from March 1 to September 1 the same arrangements with respect to per diem charges on freight cars as existed on February 29. The matter was the subject of a recent hearing before the division, at which it appeared that since federal control ended most of the trunk lines which connect with short line railroads had refused to continue the practice established by the director general of railroads of allowing two days' free time on freight cars and have also sought to collect the per diem charge of 90 cents per car which was adopted by the American Railway Association in place of the 60 cent rate charged by the director general. The American Short Line Railroad Association took the position that the transportation act prohibited the trunk lines from charging their per diem practices during the guaranty period without the approval of the commission. The trunk lines, represented by the Association of Railway Executives, denied that they had violated the section of the act referred to, but admitted the reasonableness and equity of the short lines' claim.

Without at this time deciding that Section 208-b of the law is broad enough to justify the view that it is an inhibition against the amendment of any practice which results in a reduction in net revenues, Division 4, in its report, said it seems apparent that it was the intention of Congress that carriers in general should be protected in revenues to be received from the public and that particular carriers would be assured of the same proportion of revenues for joint service during the guaranty period as were in effect on February 29. It is, therefore, its view that it would be reasonable, proper and in accord with the spirit and intent of the act for the trunk lines to afford to the short lines the same arrangements as existed on February 29. As to the suggestion of counsel for the short lines that the commission also determine what would be a reasonable practice as to per diem and free time as between trunk lines and short lines after Septmber 1, the report says that that question is not within the scope of the investigation and cannot be determined upon the record.

Federal Reserve Board Finds Improvement in Transportation

Improvement in the transportation situation was noted by the Federal Reserve Board in its review of business conditions throughout the country during October. This improvement, the review shows, was particularly marked in connection with the coal mining, lumber and steel industries, while an improvement was also shown in the building industry in the Cleveland district.

The effects of this improvement in transportation, according to the statement, are being shown in both anthracite and bituminous coal production. The former is now being accelerated with the return of the miners to work and, with a speeding up of transport activities, the movement of coal is becoming more satisfactory.

The Richmond federal reserve district reported better output, freer car movements and fewer labor troubles while both the Chicago and St. Louis districts reported bituminous coal production as increasing with improved car supply. Within the Cleveland district, however (Ohio, Western Pennsylvania and parts of Kentucky and West Virginia) coal distribution is "far from satisfactory because of priority orders for late shipments and for public utilities and lack of cars." The Kansas city district reported an increase in efficiency of distribution, although transportation difficulties and mine disability had been given as the reasons for the greater part of the time lost in September in the Kansas and Oklahoma coal fields. Bituminous coal production for September totaled 51,093,000 tons, the greatest for any month since October, 1919.

Reports from the Southern Pine Association showed that lumber shipments had increased. Heavy movements of pig iron, cast iron pipe and iron and steel products were reported from the Atlanta district.

Commission and Court News

Interstate Commerce Commission

The commission has suspended until March 1 the operation of tariffs which provide increased charges for dumping, skidding, trimming and leveling coal and coke trans-shipped to vessels at Lamberts Point, Norfolk, Sewells Point and Newport News, Virginia.

The commission has ordered a hearing at Helena, Mont., on November 15 in the case arising from the refusal of the Montana state authorities to put in effect for intrastate traffic the full percentages of increase in rates allowed by the Interstate Commerce Commission.

Oral arguments are to be heard before the commission at Washington on November 12 in the Wisconsin passenger fare case arising from the refusal of the Wisconsin state authorities to put into effect for intrastate traffic the amount of increase allowed by the Interstate Commerce Commission for interstate traffic.

The Interstate Commerce Commission has issued a supplemental order in the case involving rates between Mississippi river points authorizing the carriers to file class rates revised in accordance with the previous order upon not less than 10 days' notice, to become effective November 15, 1920. The commodity rates which are to become effective on January 15 are to be filed on statutory notice.

The commission has suspended until March 3 the operation of a supplement to a Minneapolis & St. Louis tariff which provides for the cancellation of joint through rates on bituminous coal, c. l., from mines on the Minneapolis & St. Louis in Illinois to destinations in Michigan and Alexis, Ohio, leaving combination rates applicable instead. The increases resulting from the proposed concellation vary from 63 to 91 cents a ton.

The commission has suspended until March the operation of City of Norfolk, Virginia (Fort Commission of Norfolk, Virginia) Municipal Terminals tariff. The suspended tariff, the schedules of which having been filed for the first time on five days' notice, provides regulations governing wharfage, handling and storage charges at municipal terminals, Norfolk, applicable on export and outbound coastwise freight, on import and inbound coastwise freight and storage and handling at inland warehouses.

Fourth Section and Special Permission Orders

The Interstate Commerce Commission announces an extension of the time within which carriers may issue tariffs to correct inequalities not consonant with Section 4, which has been caused by the recent general advances, petitions having been received from carriers throughout the United States showing that further time is necessary. The final date for the filing of appropriate applications is March 1, 1921, as to rates for the transportation of freight, and until March 1, June 1 and October 1, 1921, as to various classes of passenger fares. The commission regards the correction of these departures from strictly statutory rates as a matter of the utmost importance, to which it is expected primary consideration will be given.

"Upon the date to which the orders have now been postponed the roads will have been in the possession of their owners a year, and more than seven months will have elapsed since the commission's report in Ex Parte 74 was issued. The carriers therefore should be able either to remove the departures protected by the commission's permissive orders or to file appropriate applications as provided therein within the additional time allowed. The commission will not look with favor upon any requests for further postponement.

"Attention is also directed to Special Permission No. 50340, which authorized the special supplement issued by carriers making effective the percentage increases authorized in our opinion in Ex Parte No. 74. The special permission contains an order

requiring that not less than 16⅔ per cent of the number of pages contained in all tariffs supplemented under authority of the special permission shall be reissued within three months from September 1, 1920, and that not less than the same number of pages of said tariffs shall be issued each three months thereafter until all schedules so supplemented shall have been reissued.

"It is not the intention of the commission either to modify the terms of this order or to make any extension of the periods of time named therein. It is convinced that the requirements of the order are reasonable and will insist upon compliance with its terms."

Joint Passenger Fares

Upon further consideration of fourth section order No. 7642 entered July 23, 1920, in response to application No. 11544, and of application No. 11639 of carriers operating in central, southeastern, southwestern, western, trunk line and New England passenger territories for a postponement of the effective dates named in the said order, the Interstate Commerce Commission on October 29 authorized the petitioners to continue until October 1, 1921, joint passenger fares increased as approved in Ex Parte 74, contained in tariffs as described in exhibit A to the application which exceed the aggregate of the intermediate fares, where such intermediate fares have been reduced to meet the fares of shorter lines or routes, provided that if said carriers desire to continue beyond October 1, 1921, any of the said joint passenger fares that are higher than the aggregate of intermediate fares, they shall file with the commission on or before October 31, 1920, applications as hereinafter provided for permission so to do.

State Commissions

The Illinois Public Utilities Commission granted an increase of 35 per cent in freight rates on October 18, to go into effect on November 1, but, owing to the fact that the roads would not be able to make out new tariffs by that date, the ruling will not go into effect until November 15.

Improvement of Overhead Bridges

The New York State Public Service Commission, Second District, acting on a petition of the New York Central, relative to a bridge in Saugerties, carrying the highway over the West Shore Railroad, which bridge was built at the sole expense of the railroad, when its line was constructed in 1882, holds that where increased traffic and weight of vehicles have made an existing bridge over a railroad unsafe, even though such bridge has been originally constructed and maintained solely at the expense of the railroad company, the cost of the alterations and strengthening is assessable under section 91 of the Railroad Law, which says that the railroad shall bear one-half the cost. The commission does not have to determine whether there are funds available to defray the expenses of such change, either on the part of the railroad or on the part of the State Commission of Highways. The necessity of the change in the crossing may be determined even though money for the State's portion of it is not available. The present bridge consists of two wooden Howe truss spans with a clear width of roadway of 14 ft. 3½ in. It has a rated capacity for trucks weighing four tons loaded. The highway is now state highway No. 5169, a part of the main trunk line highway north and south on the west shore of the Hudson river. On April 29 and 30, 1920, 168 pleasure automobiles, 14 motor buses, and 34 motor trucks, some of them weighing from eight to ten tons, were counted crossing the bridge. This overloading of the bridge and its narrowness constitute a menace to the safety of the public. A new steel plate girder bridge will cost $70,000.

Court News

Damage from Overloading

Where a railroad has taken charge of a shipment of cattle under a contract stipulating that it will not be responsible for overloading, the trial court's refusal to instruct the jury not to consider damages caused by overloading of the cattle is reversible error.—Panhandle & Santa Fe vs. Sanderson (Tex.), 218 S. W. 540.

Foreign Railway News

Chile Asks for Bids for New Line

The Chilean Ministry of Railways is asking for bids for the construction of a branch line to run 20 miles north from Pedegua to connect with a main line.

A New Railway in Ecuador

The construction of the new line from Puerto Bolivar, Ecuador, to Cuenca will begin immediately, according to advices from Guayaquil. The new road will be constructed by a Chilean syndicate and R. Torriblanca, a Chilean engineer, will be in charge of the work.

Argentine Government Buys American Rails

The Argentine government has announced the purchase of 6,000 tons of steel rails from American firms, according to reports from Buenos Aires. The price was $73 per ton and the rails will be used in the construction of a new line in the province of San Juan.

Railway Construction in Argentine

An extension of the Pacific Railway from Bahia Blanca to Patagones will soon be undertaken, according to reports from Buenos Aires. The Rosario & Puerto Belgrano will build a 14-mile line from Puerto Belgrano to Bahia Blanca. This is the first new construction undertaken in Argentine since July, 1919.

New Rolling Stock for New Zealand

LONDON.

Cammell Laird & Co., Ltd., of Nottingham, has recently received an order for 2,500 four-wheeled freight cars of small capacity from the New Zealand government railways. These were quoted for by American concerns, but the English firm secured the contract at the price of $1,137.50 at the prevailing rate of exchange.

Brake-Signal Combination in England

LONDON.

The Westinghouse Brake Company and the Consolidated Signal Company, both English concerns, have amalgamated under the name of the Westinghouse Brake & Saxby Signal Company. H. G. Brown, the chairman and managing director of the Consolidated Signal Company is to be managing director of the new company.

Construction on Lunghai Line in China

The Lunghai Railway, the only east-west line of any importance in China, has now been completed across the 346-mile gap from Hsuchowfu to Kuanyintang, according to a report from Trade Commissioner Meekins at Peking. This line forms the central section of a railway from the province of Kansu to the sea, for which a Belgian concern has a concession. It is now proposed to construct the western section of 515 miles and the eastern section of 160 miles.

Freight Cars for Belgium

LONDON.

The Ministry of Railways in Belgium refuses to pay more than an average of 24,000 francs (or approximately $1,680 at the prevailing rate of exchange) each for the 2,400 freight cars it is desirous of purchasing. Belgian manufacturers refuse to supply at that price. Later reports have been received that Germany has contracted for some of these at 21,000 francs.

Of the locomotives ordered by the Belgium government, the 100 placed in Belgium have not yet been delivered; of the 150 placed in the United States, 137 have already been unloaded in Antwerp.

Automatic Train Control in England

A committee on automatic train control is to be appointed by the British Ministry of Transport, and it is unofficially reported that the committee will be composed of Col. J. W. Pringle (government inspector), chairman; Major G. L. Hall (government inspector), secretary; E. C. Cox, South Eastern & Charham; George Hughes, Lancashire & Yorkshire, and W. C. Acfield, Midland.

A New Transcontinental Line

The government of Bolivia has awarded a contract for the construction of a railway from Tupiza, the terminus of an extension of the Antofagasta & Bolivia Railway, to La Quiaca, on the Argentine frontier. The construction of this line will bridge the gap between the railways of Bolivia and Argentine and will provide a transcontinental railway from Buenos Aires on the Atlantic to Antofagasta, Mollendo or Arica on the Pacific.

Swiss Railways Operated at a Loss

The board of directors of Swiss railways has allowed for a deficit of 50,000,000 francs (about $10,000,000 par) in the budget for 1921, according to a report from Consul Thornwell Haynes at Berne. Losses are laid to the high cost of fuel and increased wages for labor. In a supplementary report the board estimates construction work for the year at 119,130,940 francs (about $23,826,188 par). This estimate includes the work to be done on the electrification program of the railways.

Spanish Railways Need Material

LONDON.

In view of the poor financial condition of the Spanish railways, the government has arranged to guarantee funds for the purchase of a number of locomotives, passenger cars and freight cars, which are necessary for the operation of the railways and the purchase of which the railways themselves are unable to finance. No definite arrangement has been made as yet for obtaining these funds, but it is expected that an increase in railway rates will be the method employed.

Austrian Locomotive Industry

LONDON.

According to the Economic Review, the Austrian locomotive works have practically executed all the orders placed with them by the Austrian state railways and are expecting others. They have sent locomotives to Poland and Italy as well as other countries. Negotiations for the export of locomotives to Russia for the years 1921 and 1922 are making slow progress. The Austrian works are not adapted for the production of the required type and the question will have to be submitted to careful expert examination, which will take time.

Mexico Hopes for Better Railways

R. Perez, director-general of the National Railways of Mexico, made a frank statement recently concerning the deplorable state of the Mexican carriers. He is optimistic, however, and is looking forward to better conditions. Mr. Perez stated that the disturbances during the past ten years had reduced the number of freight cars in his country from 16,000 to 4,000. He said further that he wanted to have through freight service from St. Louis and Kansas City to Mexico City. Many of the lines will have to be rebuilt and all of them extensively repaired, however, before any improvement in the service can be expected, he pointed out.

Proposed New Line in Mexico

The state of Sonora, Mexico, has granted a concession to the Tucson, Cornelia & Gila Bend to construct the Mexican portion of a line from Ajo, Ariz., the present terminus of the railway, to St. Georges Bay at the northern end of the Gulf of California, according to reports from Hermosillo. The Tucson, Cornelia & Gila Bend is a line owned jointly by the El Paso & Southwestern and the New Cornelia Copper Company, connecting with the Southern Pacific at Gila Bend, Ariz. It is not believed that the construction of the line for which this concession has been granted will be begun in the near future.

Equipment and Supplies

Car and Locomotive Orders in October

The Class I railroads of the United States were reported in October as having placed orders for 81 locomotives, 4,888 freight cars and 9 passenger cars. These figures have been compiled by the *Railway Age* from the orders reported in the Equipment and Supplies column in the issues of the paper in October.

The orders for locomotives, totaling 81, compare with 137 placed by Class I roads in September. The total orders for locomotives reported during October for domestic use were 93; in addition to the 81 ordered by Class I roads, there were 12 ordered by smaller roads or by industrials. There were also 79 locomotives ordered for export, and Canadian companies placed orders in Canada for 15. The orders for locomotives placed so far this year for domestic service total 1,601, of which 1,484 were ordered by Class I roads.

The orders for freight cars for Class I roads reported in October totaled 4,888. This total is low compared with the years preceding government control. The total for the month was, nevertheless, the highest for any month this year, with three exceptions, and it was within 1,000 of being equal to the number of cars ordered in the three summer months of July, August and September. The orders placed by Class I roads for the ten months' period ending October 31 were 45,142. Including the orders placed by smaller roads, private car lines and industrials, the total was 62,820.

The figures for the month and the cumulative figures for the ten months are given as follows:

TABLE I—LOCOMOTIVES ORDERED IN 1920

	United States					Canada	
	Domestic						
Issue	Class I roads	Other roads	Car lines or industrials	Total Dom.	U. S. export	Dom.	Export
January	19	9	4	32	206	.....	7
February	283	6	4	293	86	85	.....
March	201	14	13	228	89	32	.....
April	414	17	2	433	108	28	.....
May	188	2	7	197	8	3	.....
June	64	1	.....	65	40	4	.....
July	86	.....	9	95	77	2	.....
August	11	.....	3	14	24	.....	.....
September	137	.....	14	151	31	.....	.....
October	81	8	4	93	79	15	.....
Total 10 months...	1,484	57	60	1,601	748	169	7

TABLE II—FREIGHT CARS ORDERED IN 1920

	United States					Canada	
	Domestic						
Issue	Class I roads	Other roads	Car lines or industrials	Total Dom.	U. S. export	Dom.	Export
January	1,300	6	914	2,220	1,000	.....	80
February	5,992	.....	400	6,392	516	.....	.....
March	3,069	100	500	3,669	625	6,567	.....
April	18,018	.....	1,304	19,322	350	4,206	.....
May	5,010	100	2,292	7,402	207	.....	.....
June	1,006	.....	2,757	3,757	375	.....	.....
July	2,850	.....	2,618	5,468	66	.....	.....
August	1,000	50	5,106	6,156	900	.....	.....
September	2,015	.....	771	2,786	408	.....	.....
October	4,888	.....	760	5,648	405	.....	.....
Total 10 months...	45,142	256	17,422	62,820	4,852	10,773	80

TABLE III—PASSENGER CARS ORDERED IN 1920

	United States			Canada	
	Domestic				
Issue	Class I roads	Total Dom.	U. S. export	Dom.	Export
January	107	107	...	...	...
February	35	35	...	...	...
March	148	148	...	102	...
April	328	328	50	...	...
May	57	57	...	72	...
June	...	...	...	...	...
July	60	60	10	...	...
August	...	...	...	...	...
September	79	79	...	...	...
October	9	9	14	...	...
Total 10 months...	823	823	74	174	...

Locomotives

THE BRAZILIAN GOVERNMENT is inquiring, of locomotive builders, for 20 locomotives.

THE TEMISKAMING & NORTHERN ONTARIO is inquiring for 4 Pacific type locomotives.

THE SOUTHERN PACIFIC has ordered one snow plow from the American Locomotive Company.

THE REID NEWFOUNDLAND COMPANY has ordered 5 locomotives from the Baldwin Locomotive Works.

THE STATE RAILWAYS OF SPAIN are inquiring of the locomotive builders for some 2-8-8-2 type locomotives.

THE ANTOFAGASTA & BOLIVIA is inquiring, through the locomotive builders, for some 2-8-0 type locomotives.

THE SEWELL VALLEY RAILROAD has ordered one Mikado type locomotive from the Baldwin Locomotive Works.

THE MONTANA, WYOMING & SOUTHERN has ordered one 2-8-0 type locomotive from the Baldwin Locomotive Works.

THE RIO GRANDE DO SUL, Porto Alegra, State of Rio Grande del Sul, Brazil, opened bids on September 20 for 25 locomotives.

THE HAVANA CENTRAL has ordered 12 Consolidation type locomotives from the Baldwin Locomotive Works. These locomotives will have 21 in. by 28 in. cylinders.

THE MISSISSIPPI RIVER & BONNE TERRE has ordered 2, 2-8-0 type locomotives from the American Locomotive Company. These locomotives will have 23 in. by 28 in. cylinders.

THE UNION RAILROAD, reported in the *Railway Age* of August 6 as inquiring for 7, 0-6-0 type locomotives, has ordered 6 of these locomotives from the Baldwin Locomotive Works.

THE NATIONAL RAILWAYS OF MEXICO.—Negotiations are now under way and are expected to be completed soon for financing the purchase, in the United States, of 300 locomotives and about 6,000 freight cars for the National Railways of Mexico.

Freight Cars

THE NATIONAL RAILWAYS OF MEXICO.—See item under locomotives above.

THE CHESAPEAKE & OHIO is inquiring for 2,000 or more freight cars, including a number of box cars.

THE LACKAWANNA STEEL COMPANY, Buffalo, N. Y., is inquiring for from 25 to 30, 70-ton cars and for 30, 55-ton cars.

THE RIO GRANDE DO SUL, Porto Alegra, State of Rio Grande del Sul, Brazil, opened bids on September 20 for 200 freight cars.

THE INTERNATIONAL STEEL CORPORATION, New York, is inquiring for 100 steel box cars and 50 flat cars; also for 100 additional trucks for box cars and 50 additional trucks for flat cars, all for service in South America.

Passenger Cars

THE CHICAGO, TERRE HAUTE & SOUTHEASTERN has advised the Car Service division of the A. R. A. that it is anxious to secure about 15 passenger coaches for use in miners' train service. C. E. Hair, general superintendent, Chicago, Terra Haute & Southeastern Railway, Terre Haute, Ind., should be addressed.

Iron and Steel

THE MINNEAPOLIS, ST. PAUL & SAULT STE. MARIE has ordered 15,000 tons of rails from the United States Steel Corporation.

THE INITIAL SURVEY by the Illinois Central to ascertain what shippers think of the road's service was so successful that a monthly inquiry of the same character has been decided upon.

Supply Trade News

J. L. Worley, executive assistant of the Railway Business Association, has also been elected treasurer, succeeding Merle S. Clayton, resigned.

W. A. Ruth, who recently resigned from the sales force of the National Car Coupler Company, has become affiliated with the **Superior Steel Castings Company,** Benton Harbor, Mich.

L. Brandenburger has been appointed representative in Utah and parts of Idaho, Wyoming and Montana for the **Roller-Smith Company,** New York. Mr. Brandenburger's office is at 59 West Broadway, Salt Lake City, Utah.

Peter Aagaard, superintendent of buildings on the Illinois Central, with headquarters in Chicago, has been appointed president of the **T. S. Leake Construction Company,** Chicago, succeeding T. S. Leake, who has retired from active participation in the business. Mr. Aagaard was born on September 9, 1869, in Denmark. He was educated in the technical schools of Denmark, and later studied at Armour Institute, Chicago. Entering railway service in May, 1896, with the Illinois Central as a carpenter, his entire service up to the present has been with that company. In 1899, he became a general foreman, and in 1905 was appointed supervisor In 1912, he was promoted to superintendent of buildings, with headquarters at Chicago, the position he occupied at the time of his recent appointment.

P. Aagaard

R. G. Barrington, formerly connected with the Cleveland Twist Drill Company, Cleveland, Ohio, has been appointed Cleveland sales manager for the **Reed-Prentice Company,** the **Becker Milling Company** and the **Whitcomb-Blaisdell Machine Tool Company,** with headquarters at 408 Frankfort avenue, Cleveland, Ohio.

The Howard N. Potts medal, which is awarded for distinguished work in science and mechanical arts by the Franklin Institute, was presented October 20 to **E. P. Bullard, Jr.,** president of the Bullard Machine Tool Co., Bridgeport, Conn., for his work in connection with the development of automatic machinery in the metal-cutting field.

The J. B. Engineering Sales Company, 60 Prospect street, Hartford, Conn., has been appointed Connecticut sales agent of the **Conveyors Corporation of America,** formerly the American Steam Conveyor Corporation. The J. B. Engineering Sales Company is owned by **John Breslau,** who is a graduate of the Sheffield Scientific School, Yale University, and was formerly sales engineer, manager of publicity and production manager of the Terry Steam Turbine Company. The J. B. Engineering Sales Company is sales agent also for the **Griscom Russell Company** and the **Terry Steam Turbine Company,** in Connecticut.

J. B. Webb has been appointed western representative of the **Diamond Specialty & Supply Company,** Philadelphia, Pa. Mr. Webb has, for many years, been manager of the

railway supply department of the Simmons Hardware Company, and in that capacity handled the products of the Diamond Specialty & Supply Company, including water gage glasses, lubricator glasses, Watertown automatic cylinder cocks, Steinbrunn boring bars and other devices, and now through this new arrangement, will sell these goods to the railroads operating out of Chicago and west of the Mississippi river. Mr. Webb's headquarters are at 713 Chestnut street, St. Louis, Mo.

Midgley & Borrowdale

Stanley W. Midgley, formerly district manager of the Liberty Steel Products Company, Chicago, and **J. M. Borrowdale,** who was connected with the sales department of this company until the closing of the Chicago office, on September 30, have organized the firm of **Midgley & Borrowdale,** railway supplies, with offices in the McCormick Bldg., Chicago. They will handle the products of the Superior Steel Castings Company, Benton Harbor, Mich., manufacturers of steel and malleable castings; the Pneumatic Safety Valve Company, Woonsocket, R. I., manufacturers of safety valves for air tools; the Henry Giessel Company, Chicago, manufacturers of sanitary filters and coolers for railroad car and locomotive equipment; the Trumble Waste Company, of Philadelphia, Pa., and the Steel Fabricating Company, Chicago, manufacturers of sectional steel buildings.

S. W. Midgley

Mr. Midgley started his railroad career in 1898 in the office of the Car Mileage Bureau. In 1902, he became general sales representative of the National Car Coupler Company, at Chicago. He was appointed western representative and western sales manager of the Curtain Supply Company, with headquarters at Chicago, in 1906, remaining with this company until 1914. Subsequently, he became general sales manager of the Acme Supply Company, Chicago, and in January, 1918, became connected with the Liberty Steel Products Company. During the fall of 1918 he was promoted to district manager of the Chicago office.

J. M. Borrowdale

Mr. Borrowdale entered railroad work with the Fitchburg at Boston, Mass., in 1890. He was identified with this road until 1893, at which time he moved to Chicago, where he became connected with the Chicago, New York & Boston Refrigerator Company, as a car builder, holding that position until 1896. Upon the latter date he left that company and entered the service of the Illinois Central at the Burnside shops, where he started as a car builder, and was subsequently promoted to foreman, and later to general foreman. In 1909, he was made superintendent of the car department of the Illinois Central, retaining that position until 1917, when he left to join the sales force of the Johns-Manville Company. He joined the sales forces of the Liberty Steel Products Company in April, 1919.

Railway Construction

ATCHISON, TOPEKA & SANTA FE.—This company is accepting bids for a 100 ft. frame extension to its freight house at Topeka, Kan., to cost approximately $50,000. This company, which was noted in the *Railway Age* of October 15 as accepting bids for the construction on two brick lavatory buildings at Shopton, Iowa, has awarded the contract for this work to A. W. Smith, Fort Madison, Iowa.

BLUE RIDGE DEVELOPMENT CO.—This company is having a preliminary survey made for the construction of an electric line from Mt. Holly, N. C., to Blowing Rock, a distance of 70 miles. Some heavy grading in the mountains and one long, high bridge will be necessary.

CENTRAL OF GEORGIA.—This company recently awarded a contract for the construction of an engine house at Columbus, Ga., to the George B. Swift Co., Chicago. The improvement, which is now under way, will cost approximately $500,000.

CHICAGO & NORTH WESTERN.—This company has awarded a contract to the Ogle Construction Company, Chicago, for the construction of a 300-ton frame coaling station at West Chicago, Ill.

CHICAGO GREAT WESTERN.—This company, which was noted in the *Railway Age* of September 24 (page 549), as accepting bids for remodeling and extending its passenger station at South St. Paul, Minn., has awarded the contract for this work to Otto E. Olsen & Co., South St. Paul.

CHICAGO, ST. PAUL, MINNEAPOLIS & OMAHA.—This company has awarded a contract to the George J. Grant Construction Company, St. Paul, Minn., for the construction of a freight station at Sioux Falls, S. D. Additional yard tracks at Sioux Falls are being constructed by company forces.

GULF COAST LINES.—This company is constructing temporary buildings at Kingsville, Tex., to replace the machine shops which were destroyed by fire, pending the completion of plans for permanent shop facilities.

KANSAS, OKLAHOMA & GULF.—This company contemplates the construction of a freight house at Henryetta, Okla.

NEW YORK CENTRAL.—This company will erect a new bridge to carry its main line over the Bessemer & Lake Erie at Osgood, Pa.

OCEAN SHORE.—The Railroad Commission of California has authorized the Ocean Shore Railroad to abandon service on its Southern division, extending from Swanton, Cal., to Santa Cruz, a distance of approximately 16 miles. Insufficient revenue was responsible for the abandonment of the line, which will be dismantled.

PERE MARQUETTE.—This company will shortly accept bids for the construction of a new station at Sarnia, Ont.

PHILADELPHIA & READING.—This company has awarded a contract to Bennett & Randall, Lebanon, Pa., for the construction of a 30 ft. concrete and steel bridge over a highway near Brownstone, Pa. This contract is a portion of the company's program which calls for the elimination of five grade crossings between Swatara and Hummelstown on the Lebanon Valley branch.

ST. LOUIS-SAN FRANCISCO.—The T. S. Leake Construction Company, Chicago, is building an addition to the car repair shop of this company at Fort Scott, Kan., at a cost of about $15,000.

TENNESSEE.—This company has applied to the Interstate Commerce Commission for a certificate authorizing it to construct and operate a railroad up Beech Fork of New River in Campbell and Anderson counties, Tenn.

WICHITA FALLS, RANGER & FORT WORTH.—This company contemplates the construction of a houndhouse and machine shop at Ranger, Tex.

Railway Financial News

CHICAGO, MILWAUKEE & ST. PAUL.—The United States Railroad Administration reports a final settlement with this company of all matters growing out of the 26 months of federal control. The adjustment was made as of November 1, and is the first to be made with a large railroad. The main differences in the mutual accounts, as between the Railroad Administration and the railway company, according to a statement to the Railroad Administration, were in matters of maintenance of way and structures, equipment, depreciation and interest. Mutual concessions were made in an across table conference, resulting in the payment by the Railroad Administration to the company of $13,750,000 in cash, being balance due on compensation, after the adjustments agreed upon. In connection with this settlement, $20,000,000 of indebtedness due the Railroad Administration from the railway company for additions and betterments were funded, in accordance with the transportation act, the debt due the Railroad Administration being secured by first mortgage bonds of the railway company deposited as collateral. The differences between the company and the Railroad Administration were ironed out in what might be termed a lump sum settlement. There was no agreement between the parties as to the construction of particular clauses of the standard contract.

DELAWARE & HUDSON.—This company has been authorized by the Interstate Commerce Commission to issue $3,475,000 of first and refunding mortgage 4 per cent gold bonds, maturing May 1, 1943, to pledge $1,700,000 of the bonds as security for a loan of $1,125,000 for the United States and to hold $1,775,000 of the bonds in the treasury available for disposal as may hereafter be authorized.

MISSOURI, KANSAS & TEXAS.—The receiver has been authorized by the Interstate Commerce Commission to issue $675,000 of equipment notes under an agreement of conditional sale and indenture of lease to be dated June 15, 1920, to the American Car & Foundry Company and the Central Trust Company of New York, under which the car company is to deliver to the trustee 300 50-ton, 10,000-gal. tank cars, for $902,169, to be leased to the railroad. The railroad is to pay to the trustee as rental for the cars $227,169 in cash and $675,000 in equipment trust notes.

NEW ORLEANS, TEXAS & MEXICO.—The Interstate Commerce Commission has ordered a hearing at Washington on November 10 on this company's application for authority to issue promissory notes, to execute a contract for five locomotives, to issue first lien gold bonds, non-cumulative income bonds, and capital stock or voting trust certificates representing the same, and to pledge certain of the bonds as security for a loan from the government.

NORTHERN PACIFIC.—The Interstate Commerce Commission has approved a loan to the Northern Pacific of $6,000,000 for the purpose of aiding the company in acquiring new equipment and in making additions and betterments to the amount of approximately $16,000,000, of which approximately $10,000,000 is to be financed by the company. Of this loan $3,600,000 is for equipment and $2,400,000 for additions and betterments to way and structures.

The equipment proposed to be acquired, according to the company's application, includes 6 Mountain Mallet locomotives, $611,785; 20 Pacific passenger locomotives, $1,408,878; 25 Mikado freight locomotives, $1,834,215; 24 switching locomotives, $1,241,953; 300 Hart convertible cars, $1,123,374; 60 air dump cars, $300,000; 100 steel underframe cabooses, $350,000; 1,000 steel underframe box cars, $2,500,000; betterments to equipment, $300,000, making a total of $9,690,208.

The proposed expenditures for additions and betterments to way and structures include $362,000 for widening cuts and fills, $407,454 for ballast, $1,103,400 for rail and other track material, $556,557 for bridges, trestles and culverts, $473,787 for grade crossings and crossing signals, $558,600 for additional main track, $334,750 for additional yard tracks, sidings and industrial tracks, $104,679 for signals and interlocking, $109,122 for telephone and telegraph lines, $56,585 for tunnel and subway improvements, $5,119 for section houses and other roadway buildings, $222,168 for freight and passenger stations, office buildings, etc., $105,456 for water stations and appliances, $104,038 for fuel stations and appliances, $644,121 for shop buildings, engine-houses and appliances, $475,542 for shop machinery and tools, $37,327 for electric power plants, etc., $506,000 for pile drivers, cranes, etc., and $201,000 for car sheds, making a total for additions and betterments to way and structures of $6,368,905.

PENNSYLVANIA.—The board of directors of the Pennsylvania Railroad and the Pennsylvania Company on October 27 announced their intention to acquire the minority stockholdings of the Grand Rapids & Indiana, and lease its railway properties. The general basis for the proposed acquisition of the stock is that the Pennsylvania Company will use the Grand Rapids & Indiana second mortgage 4 per cent bonds, maturing in 1936, now owned by it, to purchase the minority holdings of Grand Rapids & Indiana Railway stock, par for par. This involves no new issue of securities, as the Pennsylvania Company already holds these bonds in its treasury. The interest on these bonds, which were issued in 1896, has been regularly earned by the Grand Rapids & Indiana. Action on the lease of the Grand Rapids & Indiana to the Pennsylvania Railroad Company will also be taken up promptly. The basis for the lease is that the Pennsylvania Railroad Company will pay a rental equal to fixed charges and a 4 per cent dividend on the capital stock of the Grand Rapids & Indiana. Both of the foregoing arrangements are subject to such approval of the regulatory authorities as may be requisite, but first of all the Grand Rapids & Indiana stockholders will be requested to consent to the respective propositions, viz: to exchange their stock for the bonds; or, in the case of those not consenting to the exchange, request will be made to approve of the proposed lease.

SOUTHERN PACIFIC.—The board of directors on November 1 adopted resolutions approving the separation of its 160,000 acres of California oil lands, which have been valued by government estimates between $480,000,000 and $500,000,000, and its stockholdings in the Associated Oil Company, from its railroad properties.

WESTERN PACIFIC.—A special meeting of stockholders will be held at Wilmington, Del., on November 18, to vote on increasing the common stock of the company from 475,000 to 600,000 shares and from 275,000 to 400,000 shares of preferred stock in anticipation of acquiring the Denver & Rio Grande, which is to be sold on November 20 to satisfy a judgment of approximately $38,000,000 secured by bondholders of the Western Pacific.

If this reorganization be consummated, the Western Pacific Corporation will own the following: Entire capital stock of Western Pacific Railroad Company (the operating company); entire capital stock of the new Denver company, less such amount of preferred stock as may be issued to bondholders in exchange for bonds; the stock of the Utah Fuel Company, subject to mortgage of the Rio Grande Western Railway Company, under which it is pledged. Although Western Pacific stockholders will still be short of having retrieved the loss which they suffered in the Denver company, substantially all of the assets upon which they relied when they first invested will also have been applied to their reimbursement.

Negotiations with the protective committee representing the Denver & Rio Grande 5 per cent refunding bonds have been resumed. The committee has agreed to recommend to its security holders a reduction of the bonded debt to the extent of 50 per cent, or about $15,750,000, and the substitution of 7 per cent cumulative preferred stock in lieu of such bonds. The committee representing the 7 per cent adjustment bonds has agreed to recommend to its security holders the acceptance of an offer to exchange for such of these bonds as may be tendered, 4 per cent ten-year notes of the Western Pacific Corporation.

The notice to stockholders states that the additional $25,000,000 of Western Pacific stock, $12,500,000 preferred and $12,500,000 common, is to be distributed share and share alike to preferred and common stockholders. This will mean one share of common, and one share of preferred for each six shares now held and is to be in lieu of distributing representative securities or transferring the assets to the Western Pacific, the operating company.

Railway Officers

Executive

E. W. Grice, manager of purchases, stores and safety of the Chesapeake & Ohio, with headquarters at Richmond, Va., and **R. H. Snead,** manager of export traffic, have been appointed assistants to the president, with the same headquarters and duties as heretofore, effective November 1.

Financial, Legal and Accounting

H. G. Foreman, whose appointment as treasurer of the Canadian National and the Grand Trunk Pacific, with headquarters at Toronto, Ont., was announced in the *Railway Age* of October 15 (page 678), was born at Toronto, Ont., on September 2, 1882, and was educated at Detroit University. He entered railroad service in September, 1898, in the office of the general auditor of the Lake Erie & Detroit River, at Walkerville, Ont. In June, 1902, he was employed as a clerk in the office of the accountant in the engineering department of the Pere Marquette, at Detroit, Mich., but left the service of this road in February, 1903, to become a clerk in the accounting department of the Canadian Northern, at Toronto, Ont. In June, 1909, he was promoted to chief clerk, with the same headquarters, and in November, 1916, he was promoted to chief accountant. On January 1, 1919, Mr. Foreman was appointed assistant treasurer of the Canadian National, retaining his former headquarters at Toronto. He was serving in this position at the time of his recent appointment.

Operating

D. E. Murphy, superintendent of terminals of the Chicago, Indianapolis & Louisville, with headquarters at South Hammond, Ind., will transfer his headquarters to Chicago, effective November 15.

I. B. Richards has been appointed superintendent of transportation of the Northern Pacific, with jurisdiction over the lines west of Paradise, Mon., and headquarters at Tacoma, Wash., effective November 1.

P. H. McCauley, superintendent of transportation of the Northern Pacific, with headquarters at St. Paul, has been appointed general superintendent of transportation, with the same headquarters, effective November 1.

A. Bernard, terminal trainmaster on the Illinois Central, with headquarters at Chicago, has been appointed acting terminal superintendent, with the same headquarters, effective November 1, succeeding **A. M. Umshler,** who has been granted a leave of absence on account of ill health.

H. W. Matthews, superintendent of terminals on the Grand Trunk, with headquarters at Port Huron, Mich., has been appointed joint superintendent of the St. Thomas division, with headquarters at St. Thomas, Ont., succeeding J. C. Crombie, who has been transferred, effective October 27.

D. W. Kelly has been appointed superintendent of the Iowa and Dakota division, of the Chicago, Milwaukee & St. Paul, with headquarters at Mason City, Iowa, succeeding W. M. Thurber, who has been transferred to the La Crosse division, with headquarters at Portage, Wis. These changes are effective November 1.

J. Ehrke, superintendent of the Chicago division of the Grand Trunk, with headquarters at Battle Creek, Mich., has been promoted to assistant to the general superintendent, with headquarters at Chicago, effective November 1. **D. T. Crawford,** inspector of transportation, with headquarters at Chicago, succeeds Mr. Ehrke, and the position of inspector of transportation has been abolished.

J. E. Craver, acting general superintendent of the Western district of the Northern Pacific, with headquarters at Tacoma, Wash., has been appointed general superintendent of the lines from Mandan, N. D., to Paradise, Mont., with headquarters at Livingston, Mont., effective October 28. He succeeds **A. V. Brown,** who has been transferred to Tacoma, with jurisdiction over lines west of Paradise.

T. E. Brooks, division superintendent on the Louisville & Nashville, with headquarters at Birmingham, Ala., has been promoted to assistant general manager, with headquarters at Louisville, Ky. **W. E. Smith,** division superintendent, with headquarters at Evansville, Ind., succeeds Mr. Brooks, and **M. Devney,** assistant division superintendent, with headquarters at Evansville, Ind., succeeds Mr. Smith. All appointments were effective November 1.

J. C. Barton, trainmaster of the Atchison, Topeka & Santa Fe at Pueblo, Colo., has been appointed assistant superintendent with headquarters at Wellington, Kan., succeeding B. A. West, transferred. **W. C. Ashcraft** has been appointed trainmaster at Pueblo, succeeding Mr. Barton. **H. R. McKee** has been appointed acting trainmaster at Las Vegas, N. M., succeeding Mr. Ashcraft. **J. R. Skillen** has been appointed acting trainmaster at Raton, N. M., succeeding Mr. McKee. **T. C. Looney** has been appointed chief despatcher at Raton, N. M. These changes are effective from October 3.

Edward E. Carter, whose promotion to superintendent of terminals on the St. Louis-San Francisco, with headquarters at Tulsa, Okla., was announced in the *Railway Age* of October 15 (page 679), was born at Independence, Mo., on September 25, 1875, and entered railroad service on September 1, 1892, as a yard clerk with the Kansas City, Ft. Scott & Memphis. He soon became an agent and operator and served at various stations on that road. In 1900 he became a stenographer and rate clerk in the offices of the St. Louis-San Francisco, at Omaha, Neb. Three years later he was promoted to traveling freight agent, with headquarters at Wichita, Kan., a position which he held until 1909, when he was appointed division freight agent, with the same headquarters. In 1914, Mr. Carter was appointed general agent at Wichita, and in March, 1918, he was promoted to assistant superintendent, with headquarters at Neodesha, Kan. Later, in the same month, he entered military service, was commissioned captain in the railway transportation corps, and saw service overseas. On his return to civilian life in July, 1919, Mr. Carter resumed his duties as assistant superintendent, with headquarters at Neodesha, the position which he held at the time of his recent promotion.

E. E. Carter

H. I. Battles, whose appointment as general manager of the Peoria Railway Terminal Company was announced in the *Railway Age* of October 8 (page 635), entered railroad service in March, 1882, as a clerk in the offices of the Chicago, Rock Island & Pacific at Joliet, Ill. In 1893 he was appointed agent at Joliet, where he served until 1903, when he was transferred to Peoria, Ill. In July, 1907, he was appointed general agent, with headquarters at Peoria; he was promoted to division freight and passenger agent, with the same headquarters, in March, 1918, serving in this position until the time of his recent promotion.

J. C. Hemming, whose appointment as superintendent of the Belt Railway, with headquarters at Clearing, Ill., was announced in the *Railway Age* of October 15 (page 678), was born on August 24, 1877, at Derby, England. He entered railroad service in 1897, in a machine shop of the Chicago &

North Western, and was employed there until 1899, when he became a fireman on the Belt Railroad. In 1902, he was promoted to engineer, was made traveling engineer in 1910, and in May, 1915, he was promoted to trainmaster on the same road. In July, 1918, during federal control, Mr. Hemming was appointed superintendent, a position which he held until March, 1920, when the roads were returned to private control. At the time of his recent appointment he was assistant superintendent of the Belt Railroad.

E. L. King, whose promotion to superintendent of the Salt Lake division of the Southern Pacific, with headquarters at Ogden, Utah, was announced in the *Railway Age* of October 15 (page 679), entered railroad service in September, 1894, as a clerk in the maintenance of way department of the Sacramento division, of the Southern Pacific. In 1895 he served as telegraph operator and agent at various stations on the Sacramento division, and in 1900 became a clerk in the office of the superintendent. In 1901, Mr. King was made train despatcher at Sacramento, Cal., and in 1906, he was promoted to chief train despatcher and transferred to Sparks, Nev. He returned to the Sacramento division as train despatcher in 1908. Two years later he was appointed chief train despatcher of the Shasta division, and in 1912 was promoted to trainmaster. At the time of his recent promotion, Mr. King was superintendent of telegraph, with headquarters at San Francisco, Cal., a position to which he had been promoted in February, 1914.

Traffic

Hugh S. Wilson has been appointed commercial agent of the Erie, with headquarters at Chicago, effective October 25.

H. Desmidt has been appointed general agent of the Southern Pacific, with headquarters at Paris, France, effective November 1.

G. J. Lovell has been appointed district passenger agent of the Wabash, with headquarters at Minneapolis, Minn., effective November 1.

A. E. Marteny has been appointed general agent of the Chicago Great Western, with headquarters at Leavenworth, Kan., effective October 16.

Mechanical

J. Herron has been appointed acting superintendent of motive power of the Duluth, South Shore & Atlantic, with headquarters at Marquette, Mich., succeeding J. J. Conolly, granted leave of absence.

D. M. Pearsall, superintendent of motive power of the Atlantic Coast Line, second and third divisions, with headquarters at Waycross, Ga., has been transferred as superintendent of motive power, first division, with headquarters at Rocky Mount, N. C. **J. E. Brogdon,** shop superintendent at Waycross, Ga., has been appointed superintendent of motive power, second and third divisions, with the same headquarters, succeeding Mr. Pearsall. **F. P. Howell,** master mechanic at Savannah, Ga., has succeeded Mr. Brogdon as shop superintendent at Waycross, and **J. W. Reams** has been appointed master mechanic at Savannah, succeeding Mr. Howell. These changes are effective October 15.

Engineering, Maintenance of Way and Signaling

William C. Allen, whose appointment as assistant valuation engineer of the Fort Worth & Denver City, with headquarters at Fort Worth, Tex., was announced in the *Railway Age* of October 15 (page 680), was born on May 7, 1886, at Hennepin, Ill. He was educated at the University of Kansas, and entered railroad service in November, 1907, with the Fort Worth & Denver City, as a rodman, and during the next eleven years served successively as instrumentman, ballast engineer, assistant engineer, and assistant valuation engineer. In June, 1918, he entered military service and served with the American Expeditionary Forces as a second lieutenant in the Forty-seventh Engineers, being engaged in construction work, and as a supervisor of track. In July, 1919, upon his return to civilian life, Mr. Allen was appointed engineer of the Lone Star Gas Company of Dallas, Tex., the position which he held at the time of his recent appointment.

Special

Julius H. Parmelee, as recently noted in these columns, has been appointed director of the Bureau of Railway Economics, with office at Washington, D. C., his title having been changed from chief statistician. Mr. Parmelee was born on October 10, 1883. He was graduated from Yale in 1904. He then attended the Yale Graduate School for three years and was an instructor in economics in Yale College, receiving the degree of Ph.D. in 1910. In 1907 Dr. Parmelee went to Washington as special examiner for the Interstate Commerce Commission. After two years with the commission he became connected with the Immigration Commission on special editorial work and he was for one year and a half with the Census Bureau as special agent. He was appointed statistician of the Bureau of Railway Economics in 1911 and on November 1, 1914, on the resignation of Logan G. McPherson as director, Dr. Parmelee was made resident head of the bureau at Washington, while Dr. Dixon was in charge as director. After the resignation of Dr. Dixon in July, 1918, Dr. Parmelee was placed in full charge of the bureau, but with the title of chief statistician. For five years Dr. Parmelee has been one of the editors of the American Statistical Association Quarterly and he is a member of the board of editors of the American Economic Review.

J. H. Parmelee

Obituary

C. C. Higgins, superintendent of motive power of the St. Louis-San Francisco, was killed at Racine, Mo., the night of November 3, when a freight train crashed into his private car.

Donald G. Stuart, secretary of the Eastern Railroad Association, died at the office of the association, Washington, D. C., October 23, 1920. Mr. Stuart was born February 20, 1855, at Washington and was educated in the public schools of that city. He entered the service of the Eastern Railroad Association in 1879 and in 1908 was made assistant secretary. From March, 1917, until May, 1918, Mr. Stuart filled the position of the secretary, who was absent on account of ill health, and in May, 1918, was appointed secretary.

M. F. Bonzano, formerly general superintendent of the Philadelphia & Reading and chief engineer of the Toledo, St. Louis & Western and the Pittsburgh & Shawmut, died October 29, at Guilford, Conn. Mr. Bonzano was born May 13, 1858, at Detroit, Mich., and was educated at Rensselaer Polytechnic Institute, Troy, N. Y. In 1878 he first entered railway service as an assistant engineer on the Pennsylvania. In 1882 he went to the Philadelphia & Reading in the same capacity and in 1885 was appointed roadmaster. In 1886 he was promoted to division engineer and, in 1890, to superintendent and, in 1893, general superintendent and assistant to the vice-president. Subsequently he served in managerial positions on various small roads. In 1901 he became chief engineer of the Toledo, St. Louis & Western, which position he left in 1904 to become chief engineer of the Pittsburgh & Shawmut. Mr. Bonzano retired from active railway work in 1906.